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Original Contributions.

PREPARATION OF PROXIMAL CAVITIES IN INCISORS AND CUSPIDS, AND THEIR INSTRUMENTATION.

BY W. E. HARPER, D.D.S., CHICAGO. READ BEFORE FALLS CITIES DENTAL CLUB AND LOUISVILLE ODONTOLOGICAL SOCIETY, AT LOUISVILLE, DEC. 17, 1898.

In the consideration of this subject it will first be necessary to explain the method of measuring the essential features of the working points or blades of cutting instruments, as it is my purpose to not only describe the preparation of these cavities, but also the particular instrument used in each step of the work.

Dental Instrument Gauge, (Fig. o.) This gauge for dental instruments is used especially in the measurement of excavators, pluggers, and burs. It is in the metric system, and is used as follows: 1st. Measure the width of the blade in the slot numbered from 0 to 50, which gives the width in tenths of a millimeter. This is the first figure of the formula. 2d. Measure the length of the blade in the gradations on the principal shaft, which gives the length of the blade in millimeters. This is the second figure of the formula. 3d. Measure the angle of the blade with its shaft by laying the handle of the instrument on the main shaft of the gauge, parallel with the lines, and bringing the blade (turned towards the small numbers) parallel with one of the gradations of the circular head. This will give the angle of the blade with the shaft in centigrades or hundredths of the circle. This gives the third figure of the formula. These formulæ are stamped on the handles of the excavators. Plugger points may be similarly measured and designated. The diameter of burs may be obtained by measurement in the slot.

Definitions.—Enamel Margin—A line on the surface of a tooth, forming the boundary of the cavity. Marginal Edge—The cut surface of the enamel, including its thickness. Marginal Angle—The angle or bevel formed by the marginal edge of the enamel and the

external surface of the tooth. Axial Wall—The wall of a cavity in an axial surface of a tooth that covers the pulp. Pulpal Wall.—That wall of a cavity which is to the occlusal of the pulp and in a plane at right angles to the long axis of the tooth.

Proximal cavities in the incisors and cuspids are due to habitual uncleanness of these surfaces, the central focus of this unclean area being situated just gingival of the contact point, in which location the incipient decay will be found.

If the above statement be true, and in my judgment it cannot be disputed, as structural imperfections are never found in these locations, the first requirement in their preparation would be the cutting away of all parts of the surface habitually unclean, extending the enamel margins to a point of immunity. This constitutes extension for prevention and will necessitate the cutting away of much sound tooth substance in some cases, namely, those in which there is much apparent disposition to decay, often found where the saliva is mucoid, ropy and adhesive, favoring uncleanness on surfaces inaccessible to the tongue, lips and toothbrush. This extension should always be made unless there are good reasons for not doing so, in which case the filling may be considered more or less temporary.

In individuals of clean habits, where an occasional small cavity is found, the carious action having been of slow progress, and in which we find the marble-like proximal contact with well-formed interproximate spaces, the requirements in extension are not so radical and may be modified somewhat, as the judgment of the operator may dictate. In such cases the character of the saliva will be found to favor cleanliness, lacking that viscosity often found where there is a great disposition to decay. Also in persons past middle life, where little disposition to decay is apparent, it may not be necessary to make this extension, and occasionally we may have to defer such extensive operation in those whose health and physical status would make a long operation in gold inadvisable.

The cavities illustrated are ideal and permit of much modification if there be valid reasons for the change, but if extension for prevention is not carried out, the permanence of the filling will be questionable, as demonstrated by the frequent failures in this class of fillings.

Fig. 1 shows a mesial cavity meeting requirements of extension

for prevention, which with perfect preparation of the marginal edge and adaptation of the filling material, will insure a permanent filling.

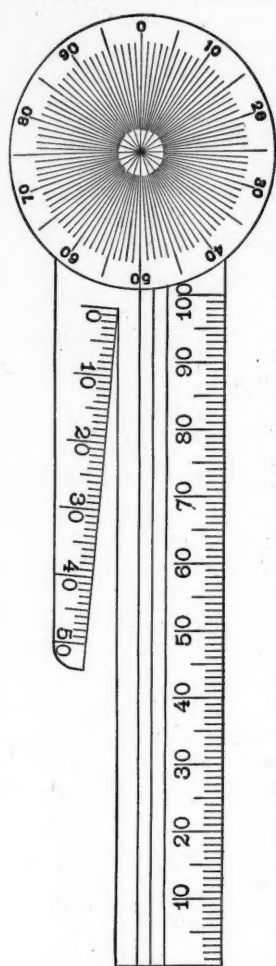


Fig. 0.

The enamel margin of the labial wall (A) is cut labially sufficiently to permit direct access to all parts of the cavity; and if the gold shows from the labial it will sometimes be necessary to make further extension so that it will reflect the light, as failure to do this will make the gold appear as a black line between the teeth.

The lingual margin (B) should be extended to the crest of the mesio-lingual line angle, and if upon close examination there be any question as to the strength, or the dentin supporting this wall, I would cut to the developmental groove, as indicated by the dotted line (H). This latter extension will be found generally best unless the cavity be discovered early, as often the occlusion is constant and forcible along the marginal ridge of the lingual surface and will sooner or later cause failure at this point.

The preparation of the marginal edge of this wall calls for special care, since the enamel rods vary much in their direction, and as a result there is great danger of leaving short ends of enamel rods unsupported by dentin, which are usually broken down by the plugger point in condensation of the gold, or later by occlusion.

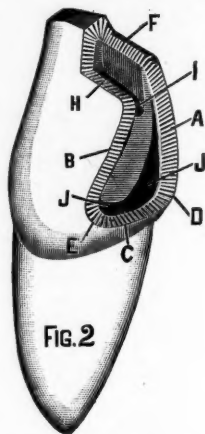
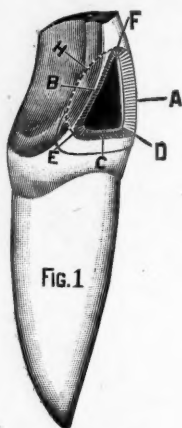
The gingival margin (C) should be extended gingivally sufficiently to be located well beneath the gingivae, or in case of much recession of the soft tissue

of the interproximate space, it should be cut to a point where it will be constantly cleansed by the circulation of the saliva.

The incisal angle (F) should be cut just incisally of the contact point, care being exercised to avoid leaving a very thin edge of gold too near the cutting edge.

The enamel margin of the labio and linguo-gingival angles (D,E) should be cut in short curves to insure their location at a self-cleansing point.

The extension of the labial and gingival margins is best accomplished by cleaving the enamel with hoe excavators 12-5-6, or binnacle chisel 15-8-6 or 10-6-6, as these instruments used sharp and held about parallel with the direction of the enamel rods will be found to cleave the enamel readily, indicating the direction of the



rods, which should be carefully observed that the proper final preparation of the marginal edge and angle may be made.

For the preparation of the gingival margin and seat, hatchets 12-5-6 and 8-3-6 will be found best.

Retention is made by first squaring out the axio-gingival angle in its entire length with hatchet 8-3-12; or the same may be accomplished with a small-sized (five-tenths of a millimeter) inverted cone bur, holding the handpiece as near parallel with the long axis of the tooth as possible. In the dentin of the labial and lingual third of this gingival wall I now press the flat end of the bur; cutting rootwise to a depth not to exceed half the length of the side blades of the bur. These retainers mesio-distally are as wide as the diameter

of the bur labio-lingually, about one-third the length of the gingival wall. When doing this, I groove *slightly* from the bottom of these retainers the labial and lingual walls. I now take hoe 6-2-23, and placing the blade at the bottom of the retainers of the gingival wall, cut incisally, thus squaring out the labio and linguo-axial angles, instead of round grooves similarly placed, which offer much less retention. Retention in the incisal angle (F) is made by squaring it out (not using a pit) with hatchets 3-2-28 or 5-3-28.

I now take as large a spoon excavator as the cavity will permit, usually 15-8-12, and remove any remaining carious dentin covering the pulp in the axial wall.

The cavity is now ready for the final preparation of the marginal edge, which has been cut in its entire extent parallel with the direction of the enamel rods. To be more certain, I now use a keen chisel (the blade being held parallel with the length of the margin to be prepared) and shave carefully the outer two-thirds of the marginal edge in its entire extent, and with the same instrument I bevel the marginal angle, which should include about one-quarter the thickness of the enamel or marginal edge, making a bevel with the external surface, about six to ten degrees centigrade.

Fig. II—Shows a mesio-incisal cavity. The loss of the angle makes it necessary to resort to an inciso-lingual step to resist the tipping strain and lingual occlusion, which in this class of cavity will be found the chief cause of failure, the extent of decay having carried the margins to a self-cleansing point.

The mesial portion of the cavity is prepared exactly the same as for mesial cavities first described, except that the squaring out of all angles and the retainers of the labio and linguo-gingival angles (D, E) are as large as the dentin will permit.

The inciso-lingual step (H) is cut (using for this purpose a small inverted cone bur), starting in the dentin of the axial wall near the cutting edge, cutting from within out and extending it mesio-distally to the opposite developmental groove. The flat end of the bur will leave the dentin of the pulpal wall flat and in the form of a square groove (I). The remaining labial and lingual wall or plate must under all circumstances be supported by dentin. The enamel of the lingual step (H) is cut gingivally sufficiently to effectually resist the incisal and lingual tipping strain, and must be left to the judgment of the operator.

The labial step (F) is now made with a smooth carborundum wheel. This should be deep enough to permit insertion of gold sufficiently thick to resist wear and the strain of occlusion, and to protect the labial plate from occlusion. The corners and angles of the enamel and dentin where the mesial and incisal portions of the cavity unite must be well rounded.

The marginal edge of the entire cavity must be cut first, parallel with the enamel rods, making the marginal edge slightly obtuse with the external surface; next, cut the marginal angle, which should include about one-quarter the thickness of the enamel and beveled six to ten degrees centigrade.

Fig. 1. A mesial cavity in a central incisor. The marginal edge or full thickness of the enamel is indicated by the black and white lines. A—labial; B—lingual; C—gingival wall; D, E—shows the labio and linguo-gingival angles cut on short curves. F—the incisal angle being extended incisally of the contact point. The black shading in the dentin of the angles D, E, F, indicates the retention made by squaring these angles. The dotted line H shows the necessary extension when decay has undermined the lingual wall B, and will be found quite common.

Fig. 2. A mesio-incisal cavity in an incisor. The entire marginal edge is indicated by the black and white lines. A—labial; B—lingual; C—gingival wall; D, E—labio and linguo-gingival angles; F—labial steps; G—axial wall; H—lingual step; I—square groove, full length of the lingual step; J-J—black shading shows the extent of the squaring of the angles in the dentin of the labio-axio-gingival and the linguo-axio-gingival angles.

PRESIDENT'S ADDRESS.

BY DR. J. A. ROBINSON. READ AT TWENTY-THIRD ANNUAL MEETING OF
THE VERMONT STATE DENTAL SOCIETY, AT BURLINGTON, VT.,
MARCH 15-17, 1899.

You may think me pessimistic in my views relative to the subject of dentistry, and more apt to look on the negative side when I undertake to say anything.

The ignorance or indifference of people as to the value of their teeth, as well as the want of care of them, is deplorable. Many ignore the worth of their teeth; think little more of losing a tooth than losing a hair of the head. Much less do they think it

necessary to keep their mouths in a clean, healthy condition; most people wash their hands and faces, but how many their teeth? Worse than all this is the disregard many show for the teeth of their children. If most of the teeth of our generation are past redemption, all the more reason why the teeth of the coming generation should receive proper attention. It may be in a large majority of cases that the want of means prohibits some from having much done on their teeth; but in these days of brushes, soap and water, there is no excuse for going with filthy mouths, and clean teeth will not decay. Along with this comes another evil—having a little done on the teeth and not completing the work. A little work on the teeth is like a little learning—dangerous. The cry then is that “dentistry does not pay,” and surely it does not when done in that way, with dollars paid out to fill a few of the teeth; with the work on many not done, and no care taken of those that have received attention. The result is a complete breaking down of all, with a cry of dissatisfaction toward the dentist and all pertaining to him, and nearly every attempt made to educate the public is usually looked upon as simply another method of getting their money without a *quid pro quo*.

How much of the dental literature of the day are we reading? Not how many of the journals do we subscribe to or receive sample copies of, but how much do we read. The field of dental literature is well and ably filled, and I advise taking as many of the journals as one can, and reading them. This is adaptable to all, and particularly to the student and those who are just starting into practice. Keep up your reading, a little every day; and one thing more, keep with this the habit of adding to your library at least one new book on the subject of dentistry each year, and make all you can of that book—read and study it. To me it matters not so much who publishes the magazines and books as does what the various ones contain; neither does the highest subscription price or largest number of pages always mark that which is the best.

May I say a few words relative to our society meetings. If more were but willing to try and do what they can to help we would have a flourishing society indeed. All have a talent in some direction; those little ideas that come to us while we work

helped us and will help others if we but tell of them. Many times we have been at some knotty point when from but a word, perhaps dropped by some one, has come the idea that has helped us out of our trouble. By personal experience I know it is not always possible for the committee to get what they want for the program; it is difficult to get anything when all either pay no attention to requests or ask to be excused. Our dues are very small and it costs much to procure an outside talent, and is not right either; it is therefore evident that more of our own members should assist or our dues must be increased. I have thought our meetings would perhaps be of more benefit if there were a less number or variety of subjects presented and more time devoted to each—if each session were devoted to one subject. Several papers from as many different writers being presented, would it not give more opportunity for discussion, thus treating the subject better and with more beneficial results, than if each of the four or five papers were all different?

For the clinics, I like the ideas presented by your president last year, which have been carried out by others successfully, of keeping the meeting in session during the clinics, setting the chairs on raised platforms and using the blackboard. With nearly all operations we are more or less conversant; it is not necessary that we watch every cut of excavator, revolution of bur or tap of plugger; the operator by using the blackboard and crayon can show what he is doing and can do better work than if encompassed by a crowd. But a few can get near enough to hear, much less see, if all are crowding up, and soon those on the outside, getting tired, pronounce the clinic a failure and the clinician is not shown the attention and respect he is entitled to. I think an hour devoted to an experience meeting where all are at liberty to ask questions and bring some little items of interest, would be of great value and the cause of much good.

There can be no fault found with the present committee for they have labored long and hard for their program, but may there not be something here worthy the attention of committees to come? The advances and improvements in our profession are many and varied, and it behooves us to keep eyes and ears open to catch and hold whatever is valuable. Our meetings are for that purpose, and as we have but one a year, and only a few short hours at that, we must make them as interesting and profitable as possible. Two or three things more might be alluded to with benefit, I think. One

is having a register in the keeping of the secretary, wherein all visitors, as well as members in attendance at our meetings, shall register their names and addresses; it would make a very desirable souvenir if of no other value. Another is the forming of district dental clubs in different parts of the state, to meet at least once a year for an afternoon and evening. I think such a scheme might be instigated and result in a more friendly feeling among neighboring dentists, as well as in much good to each one who attends. I also think it would be a means of educating the public. If they saw the dentists were interested enough in their business to meet often to exchange ideas, they would be led to believe there was really more in dentistry than they thought. I know attending our meetings has been a benefit to me; not only that I have learned many things, taken you by the hand, exchanged ideas, but my patients think more of me for these outward signs that I am keeping up with the times.

We read much in regard to dental education. I think there is need of it, especially education of the dental colleges. One is led to think by what some writers have to say that the colleges are all above reproach; but as they will admit within their walls those who are lacking in education, as well as those devoid of good principles and character, it looks as if there is need of reform somewhere. It appears that some of the colleges are not much better than those nefarious concerns which sell their diplomas outright. When those who do not possess a common district school education, who could not possibly pass the preliminary examination as required by the prospectus of the college if strictly adhered to, who could not pass the examination of a state board because of a lack of education—I say, when colleges which stand among the best admit such, they come very near selling their diplomas to anyone who has the money to pay for them. Not only are such students allowed to matriculate, but to open an office in their room and practice at dentistry, and that too during their first year. It must be it is not to the fitness of matriculates these institutions are looking, but to the money they will get for their diplomas.

I think the trouble is with the colleges; if they were more diligent in the performance of the duties they owe the profession there would be fewer of their graduates that become a disgrace to an honorable profession and to honest men in it. Our ranks are becoming filled

with more and worse scum every year, owing to the slackness and greed of gain shown by many dental colleges, and young men of disgraceful habits are being turned into the profession to prey upon society and bring disrepute upon us. Let me quote extracts from a paper by Dr. I. P. Wilson of Iowa, which was published in the January Digest. He says in part, "Never before has quackery developed itself in high places so boldly as at the present day. I mean by this that fairly well educated men, dental college graduates who are devoid of principle, are swindling the public, degrading the profession and endangering human life as never before.

. . . It is true that the door of admission to practice has been closed against an ignorant class of men who were unable to pass the examination of the state board, yet a more shameless class of graduates from our colleges is growing larger day by day.

. . . The remedy for this growing evil lies almost entirely with the colleges, and I would suggest that they be much more careful in receiving students, for they should know what kind of material they are to work upon before allowing a young man to matriculate. The question should not be how large a class can be secured, but what is the character of the students that are being admitted. A man with a dental diploma who does not possess a good common school education is a dangerous person to be admitted to practice. Such a dentist will rarely take any interest in our dental societies, except it be for purely selfish purposes. Dental literature, so abundantly supplied through our journals, will not be relished by him because he cannot comprehend its meaning.

. . . Our dental colleges are the portals to our profession, through which no unworthy applicant should be allowed to pass." To my mind this goes to show that we cannot look to the dental colleges to remedy these evils, for it is too evident they care more for the large classes and the accompanying fees than for the character of those admitted, as just quoted from Dr. Wilson's paper. We must rely on our state laws and our state boards of examiners to do the work left undone by the colleges. To the state boards I would say: Guard well the door entrusted to your keeping. Do well your whole duty. Be as sure of the good character of those who apply to you for admittance as you are of their professional ability. Sift the incoming men to the best of your power. To you we look for aid to keep unworthy ones out.

The cry to down the examining boards as being unnecessary is the work of the colleges I believe, that they may better increase the number of diplomas sold and scatter them everywhere. I wish also to read a short quotation from a recent editorial in the DIGEST. "In dentistry the preliminary requirements are far too lax. Almost any young man can to-day enter a dental college if he has money enough to pay the necessary fees. His education is a secondary consideration, and his moral character is not scrutinized too closely. The exceptions to this proposition are exceedingly rare, and when an applicant is rejected by one school he is almost invariably admitted to some other in the association."

I am glad to be able to say however, that all dental graduates are not to be classed with these, for there are many young men worthy in every way, who have fitted and are fitting themselves for the profession of dentistry, and who are ornaments to any calling they may enter upon. It is not of them I have written, but of those who are dragging down our profession.

ARTISTIC CROWN FILLING.

BY DR. E. O. BLANCHARD, RANDOLPH, VT. READ AT TWENTY-THIRD ANNUAL MEETING OF THE VERMONT STATE DENTAL SOCIETY, AT BURLINGTON, VT., MARCH 15-17, 1899.

Some critical persons may consider my title rather strained and presumptive, but like Shakespeare, I believe there's a great deal in a name. Doubtless you may have heard the somewhat rude but forcible story of the man who, suffering from a painful tooth, went in search of the proper man to remove the offending member. His literary attainments being limited, he was rather perplexed upon finding two door-plates on adjoining doors, one of which announced "John Weeks, Dentist," and the other "Adam Strong, Dentist." With difficulty he spelled out "J-o-h-n, John, W-e-e-k-s, Weeks," whereupon he muttered, "He's no good for a dentist." Then turning to the other he read "A-d-a-m S-t-r-o-n-g, D-e-n-t-i-s-t," which he construed and pronounced in his own way, "A-dam Strong Dentist." "Ah!" exclaimed he, "that's the man for me; no weak dentist could ever pull my teeth."

We cannot fail to observe that names and titles often influence our minds very perceptibly, either pro or con, and my head-line may possibly serve to remind us of our duties in elevating our pro-

fession to the highest standard of excellence, realizing that our operations, although matters of everyday occurrence, are by no means lacking in importance; for without any disposition to boast, we may truly say that many of them require fully as much delicacy of manipulation, skill and experience as anything that is done in any other branch of surgery.

Every dentist prides himself on his ability to place a nice crown filling in a molar, but who has not found cases (generally of course, the work of some other dentist, but *occasionally* our own) where decay has continued to work about the filling, evidently from some of the fissures which extend deep into the tooth between the cusps? Many of the posterior teeth that we are called upon to fill present prominent cusps, between which the sulci penetrate very deeply, the enamel usually wrinkling in such heavy folds as to afford an excellent lodging-place for food-particles and acidulated saliva, and these are generally allowed to remain until fermentation takes place. The chemical action thus induced penetrates and destroys the thin enamel at the bottom of the fissures, then attacks the dentin, and as this neat little operation is hidden and protected by the heavy folds just mentioned, extensive decay often occurs before it is detected.

It is an extremely difficult task to properly place a crown filling even after all decay is carefully removed, the various fissures freely opened up, and the desired shape obtained, without allowing the material—whether gold or amalgam—to overlap the margin of the cavity, and especially to continue along the line of the fissures for some distance beyond the true edge of the cavity; consequently, a little barb or point is usually left extending along the bottom of the fissures for some distance beyond the true edge of the cavity and also beyond all signs of decay. By the action of mastication or from other causes this little barb or projecting finger of the filling is almost certain to become raised or started up from its bed, where it was packed over sound tissue, thus affording a far better opportunity than ever for food and microbes to find secure lodgment, so a recurrence of the process of decay is sooner or later assured.

Now by what means can we overcome this difficulty, and otherwise improve this kind of work? Some years ago, when I had applied myself long and patiently to the finishing down of a filling of this sort in some troublesome molar, I often felt assured that the rough, deep-fissured, crinkly-crowned teeth had a disagreeable habit

of coming my way. I often experienced great difficulty in polishing coronal fillings to my own satisfaction, fearing that if much of the enamel were removed it might prove injurious to the tooth. I soon observed however, that nature apparently had no scruples against removing enamel on the coronal surfaces of these posterior teeth, for in the mouths of many of my patients whose teeth showed little if any signs of decay, the enamel had been worn entirely through, and even into the dentin, by the friction of mastication. The conclusion finally drawn therefrom was something as follows: Where the enamel is very uneven, presenting deep folds and wrinkles, it is better to work it down by the use of stone wheels, cutting down between the cusps, forming semi-circular concave sulci, which should be polished to a smooth surface, so that there shall be nothing to hold accumulations of any sort; then in the act of mastication the food will easily glide across these surfaces, tending to keep them constantly cleansed and well polished.

As all practitioners will doubtless admit, there is little danger of being too exact and thorough in finishing and polishing our fillings, although this is somewhat severe upon the endurance of our patients; but while performing this part of my task I am often made to realize how difficult and painful *is polishing* of any description, especially when applied to our everyday lives and characters.

Perhaps I ought to be rather more explicit regarding my method of preparing corono-approximal or even simple coronal cavities, as herein lies one of the chief objects of this paper. I remove the overhanging enamel so far as desired with chisels, then run out into the fissures, opening them up freely, even to the extent of "extension for prevention," with dentate fissure-burs or drills; then by the use of stone wheels I grind down into the fissures between the cusps, making moderately deep and concaved furrows. All the natural and normal sulci between the cusps are followed, and in the molars if necessary from buccal to lingual and from mesial to distal limits; also the disto-lingual sulci of the superior molars are concaved and ground out until all the fissures and wrinkles are entirely obliterated, forming an open furrow in the place thereof. Therefore, as will readily be seen, an excellent margin is left, to which we can now grind down the filling with the same stone used in cutting out the trough, thus leaving a flush, smooth surface where tooth and filling join.

After removing decay I go around the entire periphery of the cavity with very sharp chisels, cutting off the edges of the enamel so as to remove all projecting corners, working the lines of the same into rounded curves so far as possible, leaving few straight lines and no acute angles. The cavity walls should be perpendicular from the bottom of the cavity to periphery. The final cutting and shaping of the enamel walls should always be done with a very sharp chisel or an extremely fine corundum stone, as the fissure-burs and drills are liable to split, rough up, or pulverize the edges of the enamel-layers, so that no one could expect a filling to remain tight when packed against such a ragged wall.

While speaking of packing fillings I am reminded of the recent expression of a gentleman, which struck me as too good to be lost. After intently observing the process of putting in a gold filling for some time he at length said, "I see you use Klondike gold." Not clearly apprehending his meaning, I naturally asked him how he knew—how he could tell Klondike gold from any other; and as I was passing a piece of gold through the flame to anneal it he remarked, "I see you have to thaw out every piece before you can use it."

Now after a filling has been properly placed in a cavity prepared as above directed, extreme care being exercised in packing the edges properly against all the walls, etc., the process of finishing and polishing can be accomplished with some degree of satisfaction, for there is now little or no excuse for leaving an overlapping or imperfect edge, as we can distinctly see and know when we have worked the filling down to an even surface with the surrounding tooth, and nothing but solid filling is exposed to the wear and tear of mastication.

This method of grinding the occlusal surfaces of the posterior teeth is not recommended for deciduous teeth. For instance, when working for an uneasy boy, who is wriggling and twisting around until he gets his head into the cuspidor and his feet into your stomach, while you are vainly endeavoring to keep a cavity dry long enough to get any kind of stopping in, it does not add any incentive to one's ambition to make and finish an extra fine filling; but for older patients this method will secure the three requisites of a filling, which are strength, durability, and beauty, and which certainly are expected of an artistic crown filling.

CONSCIENTIOUSNESS IN OUR DAILY PRACTICE.

BY A. S. SAWYER, D.D.S. READ AT TWENTY-THIRD ANNUAL MEETING OF
THE VERMONT STATE DENTAL SOCIETY, AT BURLINGTON, VT.,
MARCH 15-17, 1899.

First of all let me say that I believe there are certain essential elements of character which are necessary to a successful dental practice; and by successful I mean that kind of practice which saves to our patients the most teeth in a useful and comfortable condition, relieves humanity of the greatest amount of suffering, and lifts the operator above that low and grovelling pursuit of mere dollars. Do not misunderstand me. I believe that to gain a competence for ourselves and those dependent upon us is worthy of high endeavor and persistent effort, but these should not be our highest or only motives. To be such a dentist one should have a great heart and an equally well-developed conscience. If nature has not given him these he should make haste to cultivate them. Both are essential. If he has a great heart and a small conscience he will be unduly sympathetic and afraid of causing the necessary discomfort and pain essential to a thorough operation. Or on the other hand, if the conscience be fully developed and the sympathetic nature small, he will do splendid work, work which will save the *teeth* of those who have the fortitude to bear the suffering he will require of them.

Of the two extremes the latter is undoubtedly preferable, but neither will reach that high degree of success which he attains who possesses in his composition these elements nicely balanced. Some one has well said, "There are three ways you may try; there are three interests you have to consider; and it will depend upon the order in which you consider them how success will be measured out to you. The first interest is your own, and it may seem to you the greatest, while it is really the least. The second interest is truly greater, for it is the interest of your professional brothers; but the last is the greatest of all, for it is the interest of your patient, and with that is eternally related the interest of the art you practice."

The interest of the patient then should be our first consideration when he or she presents himself or herself for our examination and advice. It is here that our conscience should have full play. We have many things to consider and in a measure decide, such as the

physical ability of our patient to endure a certain operation, the financial ability to compensate us for it, our own ability to properly perform it, and what under all circumstances of the case would be best for our patient.

To use mouth-mirrors, forceps, trays, rubber-dam, burs and other instruments in the mouths of different patients without first thoroughly cleansing and sterilizing cannot be too severely condemned. When we think what a hot-bed of germ-life the mouth is and the seeming carelessness of so many dentists, we wonder that diseases are not communicated in this way more often than they are. I have been amazed when visiting dental offices to see forceps put back in the case without any attempt being made to cleanse them. And how often are burs and excavators used without cleansing and without the dam. It seems to me that the danger of transmitting diseases from one patient to another by the careless dentist is peculiarly great. His fingers and instruments are so constantly going from one mouth to another that even though ordinary care be used there might still be danger.

I remember calling upon a dentist, a college graduate, and when he invited me into his laboratory I saw stretched across the end of the room a line on which were hung to dry several pieces of dam. He asked me if I used my dam over and I replied in the negative. He said he never used it on different patients but did on the same ones. I have no doubt it is possible to thoroughly cleanse and sterilize a piece of rubber-dam, but I think the saving is too inconsiderable, and that the patient would much prefer to pay an extra fee and be sure it had not been used before either on herself or others. In another office I saw a dentist at his chair finish a gold filling and take from a drawer in his cabinet, which was nearly full of partly worn-out strips, some of these to finish the filling, and when through back they went into the drawer again, to be used on the next victim. I have also seen dentists in cleaning teeth and polishing fillings for different patients dip their rubber points into the same box of pumice until it was all gone, when it would be refilled and the same thing repeated. What possibilities, indeed what probabilities of infection lie in such careless practices? Perhaps none of these charges could be justly laid to any one of you; but is there one here who honestly believes he is at all times as careful as he should be? If there is such, to him I uncover my head.

Conscientiousness With Our Professional Brothers.—To our brother practitioners we should be respectful when respect is possible (there are times when it is not). We should be charitable in our criticisms and generous in our praises of him who deserves them. To say a kind word of a neighbor dentist does not injure us, and it may help him. Indeed, I believe to severely criticise the work of a former dentist to a patient does us more harm than the one so criticised. Old Dr. Dixon of Philadelphia once told a story which nicely illustrates this point. He said a lady presented herself to have her teeth examined, and after having looked them over carefully he said to her, "The man who did that work for you didn't understand his business." She turned to him in some surprise and said, "Perhaps not, Doctor, but you did it yourself." The only reply he could make, and it was no doubt true, was, "Well, I can do better than that now." It taught him a lesson in charity towards others which he never forgot. It was work done in his early practice before he had acquired much skill or experience. We must all, I think, look back upon our first work with a good deal of humiliation. So we should be especially charitable toward the young practitioner; try to help him up, not push him down. Look upon him as a compatriot, not as a competitor.

PAINLESS EXTIRPATION OF LIVE PULPS WITHOUT CATAPHORESIS.

BY P. M. WILLIAMS, D.D.S., RUTLAND, VT. READ AT TWENTY THIRD ANNUAL MEETING OF VERMONT STATE DENTAL SOCIETY, AT BURLINGTON, VT., MARCH 15-17, 1899.

With the increasing tendency to the removal of all pulps that seem likely to die of themselves within a comparatively short time, there comes a demand for some practical and reliable method by which this operation can be performed without pain and without injuring the important pericemental membrane. Devitalization by means of arsenical compounds has proven to be a very unsafe method to say the least, permanent injury to the pericementum often resulting. We naturally turn to cocaine for a solution of the problem, and applied cataphorically the great obstacle to its use, the impenetrability of dentin, is overcome. The use of cataphoresis is however, attended by many difficulties, and it is safe to assume that owing to these difficulties there are comparatively few dentists

using the method to-day. Partial devitalization with arsenic and removal of greater portion of pulp with crystals of cocain or a strong solution is usually painless, leaves the pericementum intact, and presents so few difficulties as to recommend itself over cataphoresis in ordinary practices. It is often desirable however, to remove the pulp without the delay necessary in the use of arsenic, and in cases of this kind I have used a solution of cocain-hydrochlorate in alcohol and ether. This solution, either owing to an increased capillarity over the fluid in the dentinal tubuli or to some other cause, obtunds thin layers of the dentin so that they may be removed or drilled through. Apply the solution so soon as the slightest sensation appears, until the pulp is reached without pain. After gaining access to the pulp a few cocain crystals dissolved in the blood that follows puncture, and carefully pumped into the canal with a broach obtunds the remaining fibres. Either of these methods is extremely simple, safe, and requires little time.

TO DETERMINE THE CENTRE OF THE MOUTH.—In arranging the teeth on the model the centre must first be determined, and the median line of the lips should first be observed. But this is not all, because in nature we rarely see absolute regularity, and in studying faces we find that the nose is not always in the centre, but often inclined to one side or the other. The eyes again, are not always in the same horizontal line, and the mouth is not always straight across the face; so in determining the median line on which to pitch the central incisors, we must take an average centre of all the features concerned, and even in cases where the natural teeth in the lower are still retained, but out of centre, they should be regarded as only one of the features to be observed in determining the median line for the upper denture.—*E. J. Ladmore, Jour. Brit. Dent. Assn*

LIABILITY OF PATIENTS FOR THE FEES OF CONSULTING PHYSICIANS.—A legal case of much interest to the medical profession was recently decided in Tacoma by Judge Smalley, in the case of *McKone vs. Cole*, an action at law to collect a consultation fee of \$20, by plaintiff from defendant. The defense was that the plaintiff never employed Dr. McKone, but that the latter was called in without consulting him by his family physician, Dr. Stratton, who was attending him for an attack of appendicitis at the time, and for this reason the attending physician was responsible for the bill. The court held that in serious cases the patient is not competent to judge of his own condition, and that the attending physician need not always inform the patient of his intention to call counsel, as the excitement pending such a consultation might be prejudicial to patient's chances of recovery. A verdict was entered for plaintiff. The decision was certainly one in which law and common sense seem happily combined.—*Occidental Medical Times.*

Digests.

CASE OF SWALLOWING FALSE TEETH. By J. S. Sharman, M.D. Early on a Sunday morning a lady swallowed three false teeth attached to a gold plate. At one end of the plate was a sharp hook to fit round the next tooth and at the other two sharp points; the measurement longitudinally was 1 1-16 in. and transversely 6-16 in. The patient was awakened by a sense of suffocation. She pressed her throat and she stated that she could feel "them go down." There was practically no discomfort and the teeth were passed on the following Friday morning. On Thursday the Roentgen rays were used, but the teeth could not be detected, although from the back one could plainly see through the body, as was proved by placing a small coin over the region of the abdomen. The operator came to the conclusion that the teeth must be hidden by one of the crests of the ilia, as was no doubt the case.

It is worthy of note that experiments on the cadaver have been of little use to test the capability of the stretching of the sphincter of the pylorus. In these experiments a five-franc piece split the sphincter, whereas in the living subject spoons and forks have passed without discomfort. The ilio-cæcal valve and vermiform appendix give more trouble in children than in adults. In most of the textbooks very little or nothing is stated besides the various operations as to the treatment of these cases. Rest in the recumbent position and possibly on the right side is desirable, and for diet boiled white of egg, boiled cream, potatoes, rice and porridge, and if there is any discomfort opium should be administered. In some cases laxatives have been used with success, but this must greatly depend upon the form of the foreign body. In one case where false teeth were swallowed it is stated that oakum, figs and raisins were given and after a week the body was expelled with the oakum and figs attached to the irregularities of the plate and teeth.—*N. Y. Lancet, May, 1899.*

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POST-NASAL ADENOIDS. The facial appearance of a child suffering from marked post-nasal adenoids is most characteristic. The broad and flattened bridge of the nose; the drooping upper eyelids, from the drawing down of the inner canthus; the mouth left ajar; and the manifest difficulty of hearing, all combine to give

the patient a curiously vacant, semi-idiotic look which is very striking. In a typical case these appearances, combined with a peculiar "dead" quality of the voice, as if a cold in the head were present, so that "m" becomes "eb" and "n" becomes "ed," will lead us far in the direction of a correct diagnosis. But in doubtful cases the history as elicited from the parents may prove of value. There will probably be an account of constant discharge from the nasal passages of mucus or mucopus; also a history of noisy, snuffling respiration and snoring at night. And the deficient aëration of the blood, owing to the stenosis of the nasal passages, leads further to attacks of "air-hunger," which are evidenced by suffocative night-terrors. Lastly, there is an inability to fix the attention, a general backwardness, to which Guye has given the name aprosexia.

If the surgeon decide that a digital examination is indicated in a case where the diagnosis is doubtful, it is necessary to wrap a fold or two of handkerchief around the proximal phalanx of the forefinger of the right hand, care being taken that the folds are not voluminous enough to prevent the finger being inserted in its whole length. Then, standing at right hand of patient (who is seated), with the left hand lightly resting upon his head, so as to grip it firmly if necessary, the surgeon passes his finger rapidly backward palm upward, not to the uvula, as is frequently done, but behind the right posterior pillar of the fauces; the finger on being rotated upward will then slip behind the velum. The surgeon should now feel for the septum, and pass the finger upward until the growths are impinged upon, when the sensation will be something akin to that of a varicocele, and on withdrawing the finger the presence of blood, if present, will confirm the diagnosis.—*Dr. Eugene S. Younge, Medical Brief, April, 1899.*

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POST-ANESTHETIC PARALYSIS. By Dr. Turner, London. Read before the Society of Anesthetists. He said post-anesthetic palsies might have a central origin and were then due to vascular disturbance. They resulted from: (a) Hemorrhage precipitated by arterial tension resulting from struggling and excitement or venous congestion from asphyxia; (b) ischemic softening described as occurring in chloroform narcosis in aged persons. Functional affections associated with mental excitement might also cause this condition. Paralysis might be caused by malposition of the

patient's body, such as dragging the patient's arm or arms over his head. Various cases of this were given. In some instances the paralysis persisted some time. The muscles involved were usually the deltoid, the clavicular portion of the pectoralis major, supraspinatus and infraspinatus and brachialis anticus, biceps, and supinator longus, and in these "reaction of degeneration" was more or less complete. The lesion appeared to be one of the roots of the fifth and sixth cervical nerves. The exact spot at which the injury of the nerve occurred apparently was behind the posterior border of the sterno-mastoid, just above the clavicle, and it seemed to be the result of compression of the nerve cords as they lay on the first rib by the clavicle. Prophylaxis consisted in avoiding dragging the patient's arm upward, the head being supported on a pillow and inclined to the side on which the arm was resting. Other forms of post-anesthetic paralysis were paralysis of single peripheral nerves, such as the musculo-spiral, from doubling of the limb under the body or from pressure against the edge of the operating table. Paralysis of the anterior crural nerve, due to pressure of the nerve between the thigh and the abdomen when the patient was in the lithotomy position, had occurred. Exsanguination of a limb by a tourniquet sometimes led to palsy. A case was given in which paralysis followed a hypodermic injection of ether in the left forearm. It appeared that the nerve to the extensor indicis was actually injured by the hypodermic needle.—*Brit. Jour. Dent. Sc. May, 1899.*

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LEECHES. By Dr. U. Smith, Sacramento, Cal. I have never read anything yet, and that means a period of forty years, in any dental journal about the importance in therapeutics to the oral practitioner of this little muscular animal. It is in all probability for the want of acquaintance as to its utility. With those that know it is unquestionable. Two weeks ago I "gold"-shod or built on to the upper front incisors, cuspid and bicuspid. The lady returned about five days after the work was finished, with severe inflammation in the last tooth fixed. Pericemental inflammation was acute, not able to occlude with the opposite bicuspid. The fact was, I had drilled too near the pulp, distressingly so. Now the remedy. I coained the buccal surface; then with a very small drill in hand-piece I perforated the process to as near apex of root as possible; then applied leech after leech until six were well filled. The in-

flammation was then reduced and relief given. I ground a little from the antagonizing tooth, then dismissed her.

Some years ago I crowned in Los Angeles fifteen teeth for one man (he is dead now, though the work was not the cause); from some of them the natural crowns were all gone, even with the alveolar process. To adhere the crowns, at least some of them, I put in screws; to do this I drilled on each side of tooth small holes, being careful to avoid the pulp, then inserted screws, leaving enough of screws protruding to grasp cement. Now in one of the lateral incisors I went too near the pulp, and severe inflammation soon set in. I simply applied on the labial surface twelve leeches consecutively. I continued until all inflammation had subsided, and after that all was well. In the application I have never found less than six effective. I once applied sixteen, an all day's work, to save a prima donna's front tooth, as she feared injury to her voice by losing it, and the operation was completely successful. Frequently after inserting gold fillings in front and side teeth with all possible precautions thermal changes will produce inflammation. I have completely eradicated the trouble by a liberal application of leeches even after discoloration has occurred. I believe every dentist should have a supply near at hand, for they are sometimes very useful. I have often relieved inflammation from thermal changes by making a plaster cast of the teeth, then swage over it a gutta-percha cap, and have patient wear it for awhile. It is quite a protection and usually affords relief.—*Pacific Gazette, May, 1899.*

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CHRISTIAN SCIENTIST FAKE. Taking the death of the late Harold Frederic as a text, the editor of *Brann's Iconoclast* proceeds to discuss this subject in forceful language as follows: On a train to St. Louis not long ago I sat for eight weary hours behind two women of middle age and respectable appearance. They were from Chicago. One of them was a "Christian Scientist." The other was not. The "Scientist" was bent upon proselyting, and before we reached our destination the car floor was knee-deep with mangled English. She told more than four thousand lies in those eight hours, and now and then a truth stuck up from the general ruck like a statue of Parian marble amid a patch of skunk cabbage. As for instance:

"An' my dear fren', my dear woman, my dear girl, I wanten

tell you sum'p'n 'at happened in our town—our own town—our own town—not long ago. Little Mabel Smith, a bootiful cheild not more'n five years ol', was sick with diphtheery. Her folks live on th' Wes' Side, not more'n a block from where I live. They're believers in the Lord. They wouldn't have no doctors foolin' roun' o' course. They prayed by th' baid o' that po' little innercent, an' it was lovely to hear that little cheild. She didn't make no fuss. She jus' said, 'Pray harder papa! Pray harder, mamma!' an' they prayed harder. We all prayed. Bimeby I s'pose there was fifty people in there, an' they all prayed. It was a glor'us upliftin' o' prayer."

"What becamed of the child?" asked her companion.

"Oh, the cheild died. The Lord willed it so. He wills it that way sometimes."

And I thought to myself, "You murderous, idiotic, degenerate wretch, how I would like to see that narrow forehead pressed against the wrong side of the penitentiary grating! How I would like to grab that mush-brained mother by the back-hair and drag her to an asylum for the insane! How I would like to catch that infernal jobberwock of a father on a wide and lonely prairie when I had a Winchester rifle and a spade!"

The child died, forsooth! Think of it! Think of that close, foul sick-room, made closer and more foul by the boiled-cabbage breaths of fifty jibbering, muttering, pattering lunatics. Think of the pale face of that little sufferer, the horrible phlegm rattling in its throat, the death-damp on its brow, dying like a puppy in a city of two millions of people, as far from all sensible human aid as if it were alone in darkest Africa, and beseeching its idiot parents to assist in its desperate struggle for life by "praying harder!" Shotguns would have been too good for that crowd. When I hear of a black brute lynched for assaulting a white maiden I say that the people have risen superior to the law and I am glad. If I ever hear of an outraged community grabbing a "Christian Scientist" by the left leg and beating out a grass fire with him I am going to send them some money.

These people are divided into three sects. One sect believes that stomach-ache does exist, but that the Lord, when asked, will resolve Himself into a sort of spiritual paregoric and knock that pain into the middle of week before last. The second sect believes that there

is no such thing as disease; it is all imagination; the Lord, when called upon, oils the ball-bearings of the imagination so that it will run more smoothly. The third sect does not know what it believes. There is still a fourth class which does not believe anything at all. This class, which is numerous, is in "Christian Science" for what its members can get out of it. The "imagination" theorists far outnumber the others.

"You are not sick," they will say to a man who has apical tuberculosis of the right lung, a partial hypertrophied liver, an enlarged spleen, curvature of the spine, stricture of the urethra, catarrh, ingrowing toe-nails, gally-wampus of the intercostal region and stigmatisms of the cardiacal cajuncus, "you are not sick. You just imagine you are sick. Let us pray."

I would like to stand one of these pestiferous noodles with his back to a wall and argue with him for three hours.

"You have not been whacked on the nose," I would say. "You just imagine that you have been whacked on the nose. Nobody has banged you on the os frontis and butted you in the abdomen and kicked you on the chin and chewed you on the ear. Your think-box needs fixing. Neither of your eyes is blacked; that is not a handful of your front teeth scattered on the ground; no one has caused the lumbar portion of your person to strike the ceiling with a back-loosening jar; you have not sunk to earth with a gurgling grunt. This entirely supposititious sound of blows, which seems to worry you, is non-existent. You have reached the stage where you hear things. Your huge mentality has slipped an eccentric. Your brain cries aloud for insect-powder. Let us proceed to hit the pike of prayer and hit it hard."

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ALL THE WORLD LOVES A GENTLEMAN." By L. Van Orden, M.D., D.D.S. Read before San Francisco Academy of Dental Science, Feb. 28, 1899. One month ago to-night, by a vote which I interpreted to be friendly as well as hearty, you requested me to present in a formal way my views upon the propriety of a professional society or its individual members seeking notoriety through the lay press. I accepted the postal card invitation to attend that initial meeting in the good spirit in which I conceived it to have been extended, but not a few predicted that this new movement would probably be used as one more convenient means

of self-advertisement in the lay press by those already known to be disposed in that direction. Frankness requires the confession that these apprehensions seemed to create an almost imperative demand that someone should evince his friendship for this movement by sounding a warning note and thus help to start this professional ship upon a prosperous voyage. With this object in view, when called upon to join in the felicitations of the hour, I ventured the opinion, based upon observation and reflection, that the individuals or organization of individuals who sought their own advancement, regardless of probity and the rights of others, would as inevitably live to regret the act as does he who places his hand in the fire.

Your invitation was unexpected and was accepted with reluctance, for any one undertaking a presentation upon the subject of moral conduct is liable to quickly realize how delicate and difficult a task it is to select a few acceptable thoughts upon so vast and ancient a theme. For one may almost doubt if history stretches backward far enough to find the 'human' race quite without regard for moral obligations, while through the long record of the struggle that has been the inevitable lot of nations and of individuals there has run a golden thread, now thin and almost invisible, again broader and more readily discerned, which has relieved the texture of a tale that might otherwise be almost too sad for contemplation. This golden thread has been made up of the lives of noble and unselfish natures, whose conception of life's opportunity was a grand one, and whose efforts to realize that opportunity were a succession of brave and generous acts, and if we could unravel the full story of the Stone Age itself I doubt not that members of this kingly tribe would be discovered.

Of such import is the subject of "right conduct" that it has engaged the thought of the profoundest minds, and to recall the names of some of these philosophers and their systems would be of absorbing interest. There is a charm in the modern researches of psychologists and social economists, and these must change or modify previous conclusions. Were I well prepared to present these ancient and modern thoughts you would still, I take it, prefer some ideas that relate most nearly to us as dentists. In that breezy and entertaining report of our first meeting the code of ethics was referred to as somewhat ancient, and as having possibly outlived its usefulness; that "new methods of business" needed to be adopted that we

might keep pace with other activities of mankind, and above all, convince the public that dentistry is a profession and not a trade, and that we are liberal, broad-minded professional gentlemen. Especial attention was called by the presiding officer, Dr. Hart, to the fact that two Eastern organizations were being successfully carried on without a code of ethics. In regard to the age of the code of ethics as known to California dentists, it is just an even thirty years old. It was adopted when, as has been so often pointed out, secrecy, illiberalism, misguided selfishness and unfraternal sentiments were almost universal. Nor have these sentiments ceased entirely to sway the minds of dentists and other men. I met years ago in one of our old mining towns a living specimen of those good old-time dentists. With plenty of ability he was like a vigorous old crab who had carelessly permitted the barnacles to grow on his almost impenetrable old shell. Later it was with supreme satisfaction that he was seen to appear at one of those revival meetings called a "congress," in spite of its possession of a dreadful code of ethics. Please note then, that illiberalism and other ill things long antedated the adoption of a code of ethics, and *if* the code has been but a crutch, it perhaps deserves no execration on our part.

On the other hand, it does not follow that progress has been too largely dependent upon a written code. "Laws are but customs crystalized" and the progress we sometimes boast of is after all the result of a multitude of forces, some evident and some unseen or unsuspected. In relation to progress and to things old and new men may be said to reside in three stations: Those who mistrust all things new, those who sneer at all things old, and those who live in an active, hopeful and cheerful present. Some perhaps have run the entire gamut, and are happy indeed if they anchor at last in a cheerful present.

We are just now mostly concerned with this question: Are things that are old necessarily valueless and encumbrances on the earth's face? On the way home from the last meeting it was my good fortune to ride for the first time upon the new ferry-boat "Berkeley," and although her design is new in many ways, how about the rules of conduct that have for so many years governed the pilots, engineers, stokers and deck-hands? Has the compass been thrown out of the wheel-house window, are the boilers no longer cleaned or inspected, and does the faithful lookout no longer keep his watch on

foggy mornings? How about the charts of currents and an exact knowledge of the tides? Is the starboard green light exchanged with the red on the port? If not, then we have at least one example of the fact that the march of progress does not mean always destruction in addition to revolution, and as a daily passenger on the ferry system I am glad it does not.

About the two Eastern societies that have no code of ethics. A few nights after our meeting Dr. Hart stated that the societies were composed of highminded, reliable gentlemen who needed no written code to keep them in the strict path of duty. This is as it should be, but he did not claim that all the dentists of Boston were so well reared and wise and refined as to be able to gather in one vast society, and never need to hear the meaning of the word ethics either explained or enlarged upon, for it is not a very rare thing to have young practitioners ask: "What is this code of ethics, anyway?" If one were called upon to exemplify the code he could at least say that it is not a creed but simple rules of conduct, the product of expediency and an effort to conserve the greatest good of both the public and the profession, whose welfares cannot be divorced. As man is perhaps far from a full measure of development, the rungs of the ladders by which he climbs may be replaced only by other rungs of superior excellence, or may even need to be spliced or reinforced.

It may be self-evident that the terms "profession" and "professional life" become meaningless when not associated with conduct that is correlative, and that to say, "I am not in practice for my health," is scarcely creditable. In Ian MacLaren's old "Doctor of Drumtochty" we have a character beloved in many climes, because he practiced medicine "for his health." The claim was openly made by two or three of those present at the first meeting that they would certainly lose no opportunity to attract the attention of the general public to their individual work as dentists, especially if they felt their skill to be exceptional or their methods novel. Such sentiments have the merit of frankness, but are they creditable to men who without protest have accepted the code of ethics in other organizations and have even held high offices in the same? Among some tribes of Africa deceit and theft are boasted of as accomplishments, but the frankness of the boast does not satisfy a Caucasian standard. Many discoveries do not outlive the year of their announcement,

and in the healing art it is well known that the lay press is an unsuitable medium for their advancement. A doctor's true reputation is that in which he is held by his fellows, and in spite of jealousy he will in due time be recognized by both the public and his profession. The attitude of a dental society toward the press is a purely voluntary one. If discoveries are made about which it would be well to inform the public, a society can secure their publication impersonally. When individual members seek to avoid this wise rule distrust and dissatisfaction enter our midst and the efficiency of our united efforts is lowered; integrity is the basis of all high actions and sentiments. I have never known, either personally or historically, a practitioner of dentistry whose attainments were so great as to make him in any degree superior to the code of ethics to which he has given assent. A truly public-spirited practitioner, no matter how valuable his labors, in practice as in association work, will not desire or accept such a favor.

A dental society having a code of ethics can, when its rules are violated, do one of three things: first, punish *all* who commit breaches of faith, though it must be admitted that an honest, kindly man is reluctant to take any steps against a brother practitioner; second, ignore the violation of the code; third, expunge the code from its records. The first and last alone are honorable courses of action. The term science means truth, pure and inviolable. Can this Academy of Dental Science retain its name unless it upholds, in spirit at least, the principles of the code of ethics?—*Pacific Gazette*.

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ADMINISTRATION OF DEFINITE MIXTURES OF NITROUS OXID AND AIR AND OF NITROUS OXID AND OXYGEN. By Dr. F. W. Hewitt, London. Read before the Royal Medical and Chirurgical Society, Feb. 14, 1899. The investigation was based upon the following carefully recorded and timed administrations:

	Cases.
Pure nitrous oxid.....	22
Nitrous oxid mixed with different percentages of air.....	107
Nitrous oxid mixed with different percentages of oxygen...	102
Total.....	231

In each administration records were made concerning anoxicemic convulsion, cyanosis, or other changes of color, stertor, retching movements, phonation, excitement or reflex movements, aftereffects,

dreams, duration of inhalation, duration of anesthesia, quantity of gas or gases inhaled, operation performed, etc. In order to compare cases and groups of cases with one another and to ascertain to what extent certain symptoms were met with under certain mixtures, arbitrary numerical values were given to the phenomena of the different administrations. By this plan it was found possible to draw up charts and to make numerous interesting comparisons not only between groups of cases, but between administrations of different mixtures to the same patient on different occasions. The following were the conclusions at which Dr. Hewitt arrived: 1. When pure nitrous oxid was administered to the human subject in such a manner that no free oxygen gained admission during the administration, certain phenomena arose which might be regarded as being either (1) phenomena of anesthesia or (2) phenomena of asphyxia. 2. The anesthetic phenomena of nitrous oxid, although apparently very different from those of ether or chloroform, were in their essential features remarkably similar. 3. The most conspicuous of the asphyxia phenomena of pure nitrous oxid were (1) embarrassed and deeply stertorous breathing; (2) cyanosis; (3) anoxemic convulsion. All these might be eliminated without interfering with the anesthetic effects of the gas by administering with it certain proportions of oxygen, either pure or as atmospheric air. 4. There were other less obvious asphyxial phenomena, such as wide dilatation of the pupils, swelling of the tongue and adjacent structures, and rapid cardiac action which, like the more important symptoms above referred to, might be prevented or modified by similar means. 5. Under the influence of pure nitrous oxid breathing became deeper and quicker than usual. At the end of from fifty-five to sixty-six seconds its rhythm became altered either by (1) obstructive stertor; (2) anoxemic convulsion attacking the respiratory muscles; or (3) both conditions combined. Paralytic cessation of breathing was very rare, and when it occurred was dependent quite as much upon cerebral anemia from defective circulation as upon the presence of unoxygenated blood in the vessels supplying the respiratory centers. 6. The deep and obstructive stertor of pure nitrous oxid narcosis was not met with when employing mixtures containing moderate percentages of air or oxygen. With such mixtures only soft snoring breathing was produced. When the percentage of air or oxygen was considerable (thirty per cent of air or thirteen per cent of oxy-

gen) respiration became noiseless and free from all obstruction. 7. The most marked cyanosis was met with when very small percentages of air (from three to six per cent) or oxygen (under three per cent) were administered with nitrous oxid. With pure nitrous oxid cyanosis might not have time, as it were, to become pronounced, for the administration might be cut short by deep stertor. As the percentage of air or oxygen increased cyanosis lessened, till with thirty per cent of air it was very slight, and with eleven per cent of oxygen it disappeared altogether. 8. Anoxemic convulsion, like cyanosis, was liable to be greater with small percentages of air or oxygen than with pure nitrous oxid itself, and for the reason just given. But as the percentages of air or oxygen increased the convulsion decreased, till with thirty per cent of air and six per cent of oxygen respectively it ceased to occur. 9. Reflex and excitement movements were most likely to arise either with pure nitrous oxid or with nitrous oxid mixed with small percentages of air (from three to seven per cent), or with nitrous oxid mixed with considerable percentages of air (from twenty to thirty per cent), or oxygen (from ten to twenty per cent). They were least likely to assert themselves with mixtures containing moderate quantities (from three to seven per cent) of oxygen. 10. Phonated sounds were most common when nitrous oxid was administered with large percentages of air (from twelve to thirty per cent) or oxygen (twenty per cent). When nitrous oxid was administered pure or with small percentages of air (from three to five per cent) they were met with to a moderate extent only. Phonation was least likely to arise with nitrous oxid and air mixtures when air was present to the extent of from six to ten per cent, and with nitrous oxid and oxygen mixtures when oxygen was present to the extent of from three to eleven per cent. 11. The duration of available anesthesia after inhalation was found to be longest after the administration of mixtures containing from three to eleven per cent of oxygen, the maximum duration having been attained with seven per cent mixtures. With nitrous oxid and air mixtures the resulting anesthesia was distinctly longer than with pure nitrous oxid, but the results were very uncertain in these cases. The shortest available anesthesia was recorded with nitrous oxid alone and with nitrous oxid mixtures containing thirty per cent of air. 12. In estimating the respective merits of the various mixtures used as anesthetic agents, the investigation showed that the best results

were obtained with mixtures of nitrous oxid and oxygen, the next best with mixtures of nitrous oxid and air, and the worst with nitrous oxid free from air or oxygen. Air was not nearly so suitable as oxygen for eliminating the asphyxial factors of a pure nitrous oxid administration, owing to the large volume of useless nitrogen which must necessarily be inhaled. The nitrous oxid and air cases were, as compared with those of nitrous oxid and oxygen, far more uncertain in their course. 13. There was no one mixture of nitrous oxid with air or with oxygen which would successfully anesthetize every patient. 14. In order to obtain the best form of anesthesia, oxygen should be administered with nitrous oxid by means of a regulating apparatus, the percentage of the former gas being progressively increased from two per cent or three per cent at the commencement of the administration to seven, eight, nine, or ten per cent, according to the circumstances of the case. The longer the administration lasted the greater might be the percentages of oxygen admitted. 15. The next best results to those obtainable by means of a regulating apparatus for nitrous oxid and oxygen were to be secured by administering certain constant mixtures of these two gases. Mixtures containing five, six, or seven per cent of oxygen were the best for adult males, and mixtures containing seven, eight, or nine per cent the best for females and children. 16. The next best results to those last mentioned were to be obtained by means of mixtures of nitrous oxid and air, from fourteen to eighteen per cent of the latter being advisable in anesthetizing men, and from eighteen to twenty-two per cent in anesthetizing women and children. 17. Paul Bert, whose valuable researches upon the effects produced by the inhalation of nitrous oxid and oxygen were well known, regarded an increased atmospheric pressure as essential to the production of anesthesia by means of these gases. It was clear however, from the foregoing investigation, that deep and satisfactory anesthesia, unaccompanied by any obvious asphyxia-manifestations, might be secured at ordinary pressures by mixtures of nitrous oxid and oxygen containing even as much of the latter gas as was present in our atmosphere. 18. The last-mentioned fact would seem at first sight to give a death-blow to the asphyxial theory of nitrous oxid anesthesia—a theory which supposes that this gas produces its anesthesia by limiting or arresting normal oxidation processes within the central nervous system. But because no *obvious*

asphyxia-manifestations made their appearance during the inhalation it was not justifiable to assume that no such interference with oxidation was taking place.—*The Lancet*.

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NEW METHOD OF MUMMIFICATION OF THE PULP.

By Prof. Boennecken, M.D., D.D.S., Prague, Bohemia. Having reached in the beginning of this year a record of a thousand successful cases of acute or chronic pulpitis, all treated in the same way without removing the root portions of the pulp, I venture to give a brief description of my method. Every practitioner knows that in a great many cases of pulpitis in molars or bicusps mechanical difficulties will make the total extirpation of the devitalized pulp impossible. In another great percentage of cases we cannot remove the pulp, because we dare not inflict the pain upon our patient. Indeed, this little operation is very often a greater torture than the extraction of the tooth itself. I do not know whether American patients can stand a greater amount of pain in the dental chair than European ones, but I can assure you that in our country, and especially in the large capitals of our continent, the dental parlors are full of neurasthenic and hysteric patients who cannot endure the perfect removal of a devitalized molar pulp without paying for it with a few days' suffering from severe nervous prostration.

For this kind of invalids the treatment which I am going to describe seems to me almost a necessity. I may add that busy dentists, especially those colleagues who are engaged in "praxis pauperum," very often cannot find the necessary time for a careful cleaning and filling of the root-canals after the old method that we have been taught in the college. On the other hand, a tooth with fragments of a semi-devitalized pulp left in the canals may be for a certain period of time a source of great annoyance to the bearer. Until the last trace of living pulp-tissue gets perfectly mummified, which may require a couple of months, or even years, the tooth will answer to every cold or hot drink, and will not allow a normal mastication. If, however, the pulp-tissue which has been left in the canals was already infected with bacteria, an apical abscess is certain to appear sooner or later. Therefore for all cases when we are not either able or willing to perform the total extirpation of the pulp we need some therapeutic agent that will not only perfectly and rapidly devitalize, but also permanently sterilize the fragments of the pulp.

Miller, in his admirable text-book of operative dentistry, recommends little tablets of mercuric chlorid 0.003 gram and thymol 0.005 gram to be crushed by means of an amalgam plugger in the pulp-chamber after the amputation of the crown portion of the pulp. I have tried this method in about a hundred cases, with the result that these teeth, after a short period of pericemental irritation, became perfectly healthy and quiet. The irritation lasted from two hours to three days. Afterward those molars worked like healthy teeth, and gave no more trouble. The only objection to this method, which is excellent for clinical practice, is the greenish discoloration of crown; therefore its use should be restricted to molars.

For the past four years I have been experimenting in the same direction with different preparations of formaldehyd. Formaldehyd, or formalin in its aqueous solution, has two qualities which make it extremely valuable for our purpose of mummifying the devitalized pulp. It is a powerful sterilizer, and it coagulates the albumen of the living tissue. Indeed, it hardens the protoplasm so quickly that one can change the soft tissue of a pulp into the consistence of leather by half an hour's application of formalin. Therefore it has of late been widely used for the conservation of anatomical and histological specimens.

The plan of my experiments was to sterilize and to coagulate the root portions of the pulp with formalin; in other words, to harden the pulp like a microscopical specimen, and as formalin produces little or no shrinking of the tissue, to change the semi-devitalized and infected stumps of the pulp into totally devitalized and aseptic root fillings. I began by washing out the pulp-chamber with the concentrated solution of formaldehyd and sealing in the chamber a piece of cotton wool, saturated with forty per cent formalin. All the patients treated in this way suffered between half an hour and ten hours from a severe burning toothache. The stage of irritation being once over, the teeth became comfortable, and patients soon forgot that they ever had trouble with them. I discovered that the painful reaction of the semi-devitalized pulp stumps was due to the high concentration of formalin. By gradually diminishing the strength of formalin and mixing the formaldehyd with cocain and thymol to a thick paste, I arrived at a method which I have tested now in more than a thousand cases. I now treat every case of inflammation of the pulp in molars or bicuspsids as follows:

Twenty-four to forty-eight hours after the application of arsenic I remove the crown portion of the pulp (the so-called amputation of the pulp) with a large, sharp bur, using the warm-water syringe for cleaning out all the *debris* of the cavity and the pulp-chamber. This little operation is almost in every case quite painless. Then the rubber-dam is applied and the pulp-chamber thoroughly washed out with a ten per cent solution of formaldehyd (one volume of the forty per cent formalin to three volumes of water). I call this the "formal-bath" of the pulp. Then I fill the pulp-chamber with my formaldehyd paste, cover with oxyphosphate, and put in the permanent filling. The tooth is always finished in one sitting.

Two years ago I published the following formula for the formaldehyd paste:

R—Cocain,
Thymoli, aa, I , o;
Misce exactissime terendo.
Adde sol. formaldehydi aquos (40 per cent), gtt. x ;
Zinc oxid, 2 , o.
Fiat pasta.

But a formaldehyd paste exposed to air in an open bottle does not answer very well. The formaldehyd soon evaporates and disintegrates; besides, the paste soon loses the proper consistence—it is either too thick or too thin to be handy for dental purposes. Therefore I ordered a chemist to prepare this paste with a very high concentration of formaldehyd, give it the proper consistence, and fill it in small tin tubes which could be hermetically closed. The large percentage of thymol is given to the paste to insure the permanent sterilization of the pulp fragments. A series of experiments upon pulps of different animals has shown that thymol penetrates the tissue of the pulp very slowly—in the course of several weeks—from one end to the other, and that it retains its antiseptic power, as it seems, for an unlimited time. The formalin with its rapid action may soon evaporate and disappear, whereas thymol will stay and be a reliable antiseptic agent. A small piece of the paste is pressed out of the tube, brought into the pulp-chamber with an amalgam plugger, and pressed gently against the root stumps of the pulp with a piece of clean cotton-wool. The whole operation is done in five minutes; there is no pain inflicted on the patient, and so far as my four years' experience goes, the tooth will give perfect rest. When the patient comes back to you the next day or later,

the tooth will not show any sensitiveness upon tapping with a steel instrument, a symptom which is nearly always observed after cleaning out canals and filling roots. If the inflammation of the pulp has been associated with a slight pericementitis (the so-called pulpoperiostitis) the pericemental irritation will disappear the day after the application of the formaldehyd paste.

After this method many thousands of cases were successfully treated last year in Germany and Austria, and I feel now so sure of success that whenever a failure in this treatment occurs in my clinic—may be a patient comes back with pain and pericementitis—I say to my students there has been made a mistake in the diagnosis. Of course all cases of decomposed pulp, likewise all cases of destruction of the pulp-tissue by pus-formation, have decidedly to be excluded from this treatment. In these cases the canals must be cleaned out and filled with antiseptics.

For the treatment of septic cases I have recommended for the last two years to my students and to my German colleagues the sulfuric acid process of Dr. Callahan of Cincinnati. I consider this method the greatest progress that has ever been made in the treatment of gangrena pulpæ. After a few applications of the acid the calcific depositions, which we find in almost every case of diseased pulp blocking the root-canals, are decalcified; the canals get wide, and their sterilization has become an easy thing. Neutralization is done with bicarbonate of sodium, or better with peroxid of sodium. When the canals are clean I fill them with the formaldehyd paste above described. Mix a little piece of the paste with a drop of the ten per cent solution of formaldehyd, and fill the canal with this thin cream. The disinfecting power of the formaldehyd gas that is developing after the introduction of the paste is surpassed, according to my experience, by no other antiseptic agent. I always order the patient to come to a second sitting, though as a rule the canals are sterilized after the first treatment. Very rarely a third sitting is required.

The formaldehyd paste remains in all septic cases as a definitive filling in the canals. It seems to me necessary to fill the roots in septic cases with a soft paste that will never get hard, so that if the tooth should give trouble later on you may any moment enter the canals again with your pulp instrument, and for this purpose the formaldehyd paste seems to be an ideal material.—*Cosmos, May, 1899*

NEURALGIA. By C. N. Johnson, L.D.S., D.D.S., Chicago. Read before the Chicago Odontological Society, April 18, 1899. Neuralgic affections connected with the fifth pair of nerves are frequently referred to the dentist for diagnosis and treatment, and it would seem necessary for him to study somewhat carefully the varying manifestations of the trouble, so as to be able to meet it intelligently and—if in his province—give the patient relief. The present paper has no reference to those complicated and persistent cases calling for surgical interference occasioned by a growth along the nerve trunk or to a bony development at some foramen of exit, whereby the nerve is kept constantly irritated and nothing short of an operation can ever give hope of relief. The phases of the disease selected for consideration at this time relate to those cases connected with dental irritation and to another type of the disturbance which seems to have been especially prevalent during the past winter, arising apparently from exposure or from some peculiar atmospheric condition.

When a patient suffering from pain in the fifth nerve applies to the dentist, particularly if it is in either the superior maxillary or inferior maxillary divisions, it is his duty to examine carefully all of the teeth and try to determine if it be of dental origin. It is sometimes difficult to locate the cause of these neuralgias, but if connected with the teeth at all it will usually be found to consist in an irritation produced by pulp nodules or from a suppurating pulp. Pulpless roots of teeth are not often the direct cause of neuralgia. They may lead to abscess and caries of the bone, but they seldom induce reflex disturbance. Neuralgia from pulp nodules is the most difficult affection to locate of any of those under consideration, its manifestations being more or less vague so far as any intelligent interpretation on the part of the patient is concerned. Its history is ordinarily one of gradual development rather than a sudden, spasmodic attack, and it may run for some time before the patient is impressed with its seriousness. It is usually ushered in with a sense of discomfort on the affected side, which gradually increases and is accompanied with shooting pains, becoming more and more pronounced until the patient is obliged to apply for relief.

It may run to this stage without sufficient location in the teeth to arouse the suspicion of the patient that it may be of dental origin, and in many instances the case is referred to the family physician

for treatment. It is only after he has exhausted all of his remedies without avail, that in desperation he sends the patient to a dentist for examination. Even then the patient is by no means certain of instantaneous relief, because of the difficulty of locating accurately the affected tooth or teeth. The certain diagnosis of pulp nodules is one of the most difficult problems in dental pathology. The only guideboard the dentist has is the history of the case, together with a possible reference of the patient to a certain region of the mouth where the discomfort seems greatest. It is seldom that the pain is so definitely localized that the patient is able to point to any one tooth with a reasonable degree of assurance and say that this is the seat of the trouble. Even where such reference is made, the dentist must be cautious about drilling into the tooth on the first impulse, because of the significant fact that on the very next visit to the office the patient may locate it in an entirely different place. Neither will tapping the teeth individually with the end of an instrument always locate the difficulty. The teeth are not necessarily sensitive to percussion as the result of nodular growths in the pulp. Probably the test which comes nearest to being decisive is to subject the teeth one after the other to extremes of temperature. If a tooth is found on the affected side which responds more readily than the others to the application of heat or cold, and particularly if this varying temperature produces the kind of pain complained of in the neuralgic attacks, it will ordinarily be justifiable to drill into the tooth thus responsive and destroy the pulp. The distinctive features of diagnostic value in this affection are its gradual development and its persistent continuation in the face of internal remedies, together with an increasing impression on the part of the patient that it must be connected with the teeth.

The only remedy is to persevere in the search till the affected tooth is found and devitalize the pulp and fill the canals. It sometimes happens that more than one tooth is affected, and when such is the case, it involves a patient following up of the trouble till all of the diseased teeth are treated. This is usually a slow and nerve-taxing process, and the entire procedure of managing a case of neuralgia brought about by nodular growths in the pulp is one of the most discouraging and difficult problems presented for the dentist's solution.

Neuralgia from a suppurating pulp, while more easily diagnosed

and more readily brought under control, is also sometimes confusing in its manifestations. It is likely to be located by the patient in an entirely different tooth from the one really causing the trouble, and the dentist must be on the alert and make a careful search before attributing the cause to any particular tooth and drilling into it. The disturbance often arises in a filled tooth as the result of a pulp suppurating under the filling, and when many of the teeth on the affected side are carrying large fillings it is sometimes difficult to locate. The surest test in this case is the heat test. Hot gutta-percha applied to the teeth, one after another, will ordinarily end in the detection of the affected member. The heat may cause pain in each of the teeth touched, but usually when the one with the suppurating pulp is reached, the patient will recognize it as the same character of pain occasioned by the neuralgic attacks. It is different from the ordinary sensibility of a tooth to extremes of temperature, and the patient can almost invariably make the distinction.

But even then the reference on the part of the patient is often to the wrong tooth. For example, when a molar with a suppurating pulp is touched with the heated instrument or with hot gutta-percha the patient is likely to refer the pain thus occasioned to a bicuspid. These reflex disturbances are exceedingly misleading and the operator must be very cautious about accepting the patient's impression as to the precise location of the trouble. When several teeth are filled on the affected side they should all be carefully examined by the heat test before any decision is made as to which tooth is at fault, and it would sometimes seem that the patient's previous impressions be wholly ignored in arriving at a diagnosis.

But the chief purpose of the present paper is to call attention to a form of neuralgia of the fifth nerve which seems to have little or nothing to do with the teeth as a causative agent and yet which the patient frequently refers to the teeth. So many cases of this character have been brought to the attention of the writer during the past winter that he is almost led to the conviction that there has been some atmospheric conditions which conduced to its prevalence. Whether it is a manifestation of grip or whether it is simply local on account of exposure would sometimes seem difficult to determine. It is so variable in its symptoms that it is impossible to systematically describe, and yet it is something different in behavior from anything previously encountered in practice.

The recital of a few cases may throw more light on it than an extended description: A middle-aged lady applied for relief, complaining of trouble in a left lower second molar with shooting pains extending up to the temporal region. The tooth had a large amalgam filling in it, with a history of the canals having been filled by a careful, competent operator six or seven years ago with no subsequent trouble till now. The symptoms were not those of pericementitis, and I did not feel justified in removing the filling. I counseled care against exposure and dismissed her with instructions to consult her physician if pains in the temporal region continued, but to return to me in case the tooth became sore on pressure. The next day she reported with complaint of a disturbed night's rest and the statement that the second molar had become sore. On careful examination I could not yet convince myself that there was any pericementitis or in fact any local disturbance around the tooth which would justify the removal of the filling. I applied a counterirritant to the gum—equal parts aconite and iodine—which she said gave relief, and instructed her to see her physician in case of further trouble. She demurred somewhat about consulting her physician or about taking anything internally for the trouble. The next day she reported again locating the pain and soreness this time in the lower first molar, which also contained a filling and had a living pulp. The soreness complained of was more in the nature of a lameness of the tooth than a definite inflammation and I was more convinced than ever that the teeth had nothing to do with the cause of the trouble. I so informed her and we decided to do nothing in the way of removing the fillings. This decision was fortunate. In a day or so the symptoms subsided and she has had no further trouble, the pulp remaining alive and apparently healthy in the first molar.

Another case was that of a gentleman of sixty. He was due at my office for his periodical and usual examination of the teeth; but instead of coming himself he sent his physician, who reported that the patient had been confined to his room for several days with neuralgia. The physician had administered the usual internal remedies with apparently little relief, and at this stage the patient became convinced that the trouble was connected with the teeth and wished me to call at his residence and make an examination. I did so and found the gentleman in bed much depressed

with the suffering he had undergone. On inquiry I learned that the pain had started in the temporal and parietal regions and had been intensely severe over the entire side of the head and face, finally locating apparently in an upper second molar on the affected side. The patient insisted that the tooth was now the seat of the whole trouble and wanted it extracted. An examination showed the tooth slightly loosened and sore, but without that characteristic and unmistakable evidence presented by a tooth with active pericementitis leading to abscess. There was a small filling in it, not large enough to implicate the pulp. For twelve hours preceding my visit the patient could not tolerate in the mouth any liquid with a temperature even at a few degrees above the normal temperature of the body, and said it was especially distressing if it came in contact with this particular tooth. I counseled against extraction, and as a temporary expedient suggested the domestic remedy of a roasted raisin split in two and the freshly cut surface applied to the gum around the affected tooth. This was to be used as hot as the patient could tolerate it, and allowed to remain on one hour, followed by a fresh one if the pain still continued. In response to his urgent request I promised that if he got no relief by the following day I would return and extract the tooth; but I heard nothing from him for two days, when his wife called at my office and reported that almost immediately on the application of the raisin the pain and soreness began to subside and he had experienced no further trouble. In a day or two he came to the office himself and as he expressed it there was no indication that he had ever had any pain. There was not the slightest soreness in the tooth or anything apparently out of the normal.

Another case with entirely different manifestations may be noted as an interesting and peculiar one. A young lady whose teeth had been under my care for years reported one day complaining of some disturbance in the region of the right upper molars and bicuspid. I made a careful examination but could detect nothing wrong. Nearly every tooth was filled, but there were no large cavities and no history of pulp exposures. She failed to locate the trouble in any one tooth, and I dismissed her with the impression that the trouble was merely temporary and probably due to exposure during changeable weather. I told her to report at once if the pain seemed to become definitely located or if it continued. In two days she

came into the office with the most alarming symptoms. The entire right side of her face was swollen almost out of countenance. The right eye was nearly closed and the tissues below it badly discolored. She pointed at once to the first upper molar and said that there was no mistaking the seat of the trouble this time. I found it somewhat elongated and sensitive to pressure, and concluded that the pulp had died and an abscess had formed. I immediately drilled into it only to find a permanently normal pulp without the slightest indication of complication of any sort. She requested me to destroy the pulp, which I did. The swelling in the face subsided almost as rapidly as it had developed, and she has had no further trouble.

The last case presented for your consideration has been the most persistent, and to me the most puzzling of any I have ever encountered. In December a young lady was sent to me by her uncle, a physician, for attention to her teeth on account of neuralgia. She located the trouble in a lower second molar, and said it was sensitive to impressions of all kinds—heat, cold or to the touch. There was a medium-sized amalgam filling on the occlusal surface. I removed this, thinking it might be deeper than it appeared and might approach the pulp, but I found a very shallow cavity, with no possibility of pulp disturbance from this source. I at once placed a cement filling in the cavity to await further manifestations. In a few days she reported with a statement that the pain was now in the first molar. This tooth had a cement filling on the disto-occlusal surface, and I removed this, the patient averring all the while that the tooth now being operated upon was beyond doubt the affected member. The filling was somewhat large, and though the cavity was so situated that I could not see into it perfectly, I concluded that there had been a close approach to the pulp when the tooth was filled, and that in all probability it was suppurating. I accordingly made an application for its destruction, which I now believe to have been a mistake. This was followed by the usual treatment and filling of the canals, the patient at all times certain that the tooth being worked upon was the cause of her neuralgia. After the tooth had been filled there was a cessation of the neuralgia for a short time, but in a week or so she came again with the report of a terrible night's suffering, and clamoring for relief. This time she pointed to an upper second molar, which had a small amalgam filling on the occlusal surface.

I told her that I felt certain the trouble was not induced by any of her teeth, but she seemed so positive that all the pain was in the upper molar that I finally removed the amalgam filling only to find a small cavity without complications. I inserted a cement filling and instructed her to go back to her uncle, the physician, and tell him my conviction that the teeth were not implicated. I advised that if the trouble continued he should prescribe some internal remedy, but she said he had refused to do this under the impression that the teeth were at fault. This attack passed away in a day or two and all went well for a week or more, when she came again with the same story, locating the pain this time first in one tooth then in another, but finally deciding that the lower first molar was the main offender. But in this she compromised her impressions by stating that extremes of temperature on this tooth brought about the paroxysms of pain. This in a pulpless tooth recently filled was scarcely tenable. I again insisted that the teeth were not at fault, but she and her uncle were both positive they must be. I applied to the gum around the pulpless tooth some aconite and iodin, which she immediately said gave relief. In another week she was back again and referred me to the upper first molar, a sound tooth. This seemed sensitive near the gingiva, and whenever the explorer touched it she flinched and protested that this was the tooth. On a careful examination of all the teeth of the affected side I found a very small cavity on the proximal surface of the first upper bicuspid. I opened it up and began excavating. Her first exclamation was, as it had previously been, with the other teeth, "There! that is the tooth." I found a very small cavity and filled it with cement. This is merely a meager outline of the interesting time I have had with this patient at intervals all winter, and I am firmly convinced that the teeth have not been at fault at all. I attribute the difficulty to exposure and to the unfavorable atmospheric changes that have been so pronounced during the past few months. I fully expect that when the settled weather of spring has come and the incessant round of balls, receptions and parties which she has been attending this winter are over, she will have no more neuralgia.

In fact, I cannot escape the impression that with most of the cases I have had this winter—and I have had many of varying degrees of severity—the chief factor in the causation of the trouble

has been exposure. A cold wind blowing for any time upon one side of face or any exposure to draught in a heated room, especially in the unsettled atmospheric conditions of the past winter, may well be held accountable for neuralgic troubles. The particular feature of the affection, as it has come under my notice, is the persistency with which patients have referred it to the teeth when these organs have not in any way been at fault.—*Review, May, 1899.*

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PREDISPOSING FACTOR IN DENTAL DISORDERS. By Edward C. Kirk, D.D.S., Philadelphia. Read at Alumni Association of Boston Dental College, February 8, 1899. In studying the morbid phenomena found in the oral cavity there has been a tendency among members of the dental profession to view the problem in a somewhat restricted manner; to overlook the broader aspects of the subject presented by its relations to the whole organism, and the still broader significance of its biological relations. It is this factor in the development of a specialism in any department of human inquiry which is restrictive of the highest rate of advancement, and which should therefore be carefully guarded against so far as that may be possible.

Happily, the stimulus which a few investigators have given to the spirit of original research in dentistry is bearing good fruit, and the practical advantages of scientific over purely empirical methods of inquiry are making an impress upon our practice which is placing it more and more upon a rational basis. The result is clearly seen in our literature, especially as it reflects the views now held with respect to dental pathology in comparison with the narrower views of former years. The investigations of cytologists have opened up vistas of knowledge giving us a comprehension of cell-development and function which has furnished us a firm basis upon which to build a rational understanding of physiology and pathology, and which is rapidly bringing these important branches of study into line with the exact sciences by resolving nearly all of their phenomena into problems of physics and chemistry.

Dentistry has not only felt the influence of this progressive movement, but has contributed in no small degree to its growth. The results of original investigation in the domain of dental histology and dental pathology are monuments of which we may well be proud; yet it is research within the comparatively narrow limits of

a specialty, as already noted. I would not be understood as maintaining an attitude of adverse criticism in stating the case as I have, but rather as indicating the desirability if not the necessity for a broader scope to our horizon in order that our professional grasp may be more comprehensive.

I can perhaps best illustrate the view-point which I am endeavoring to present to you by asking your consideration of certain predisposing factors in dental pathological conditions which directly bear upon the necessity for a broad study of principles rather than precepts in our specialty. The study of the human organism, both in health and in disease, has quickly resolved itself into a study of the development and vital phenomena of the cellular elements of which it is made. Not until we have attained a fair understanding of cell-development and function is it possible to intelligently comprehend the vital phenomena of the organism as a whole, and especially these aberrations from normal standards of cell-function which we designate disease.

At the very outset of our investigations of cell-function we are met by an apparently insurmountable difficulty—namely, the phenomenon of vitality, of life. All attempts as a comprehension, much less an explanation of it are baffled by the fact itself. Yet when viewed as philosophic abstractions the same difficulty confronts us when we study matter or force in any of their manifestations to our senses; nevertheless, we understand enough of the properties of matter and of force to make them in many ways subservient to our needs, and so in a practical sense we comprehend them. So also in a limited sense we may comprehend vitality as a function or attribute of protoplasm, and for purposes of physiological study regard it as a form of energy the product of chemical changes associated with cell-metabolism.

Physiologists teach us that, "broadly speaking, the animal body is a machine for converting potential energy into active energy. The potential energy is supplied by food, this the metabolism of the body converts into the actual energy of heat and mechanical labor," and as what is true of the mass is also true of its parts, the same view is true of the cellular elements of which the body is composed. In fact, it is through the metabolic agency of the cellular protoplasm that the potential energy of food is rendered kinetic. It is in connection with this transmutation of energy that vitality is made mani-

fest, and with the metabolic process it bears a direct relation quantitatively.

With these propositions before us it is not difficult to realize that a maximum cell vitality is attainable when the supply of food potential to the cell is harmoniously adjusted to its metabolic capacity, and that any alteration of its nutritive balance must necessarily work a corresponding decrease in vital potential with an attendant alteration of cell-function. It is these alterations of nutritive balance in the cell and attendant disturbance of function that constitute disease. The causes which lead to disturbances of cell-metabolism and diminution of vitality may arise within the organism itself or be introduced from without, and further, the disturbance may be local or it may be general. When the disturbing factor is a specific irritant introduced from without we regard it as the exciting or active cause of disease; on the other hand, when the disturbance is preceded by an interference with cell vitality due to faulty metabolism we classify the latter as a predisposing cause.

It is evident that the factor of vital potential is a safeguard against invasion by the multitudes of lower organic forms which are pathogenic to the human organism and which are ever-present factors of its environment. Vitality is the defensive force of the organism against pathological attack, and is in general terms effective in proportion to its degree of potentiality.

It is not my purpose this evening to consider the invading enemy so much as the defensive forces of the organism, and to ask your consideration of some of the conditions which lead to a weakening of the vital potential and the bearing of this upon certain oral lesions in which we are all presumably interested. Time will not permit of the study of that large class of acute inflammatory processes, the result of specific infections by microorganisms of the more active and virulent type, nor a study of the factor of immunity in relation to them; the most that I can hope to do is to briefly sketch some of the predisposing factors which are apparently closely related to the inflammatory disorders affecting the retentive apparatus of the teeth.

Attention to the disease designated by Black as phagedenic pericementitis was actively revived by the announcement of Peirce in 1892 that its etiology was to be found in its connection with the gouty diathesis, a conclusion which he reached in view of the results of certain analyses showing uric acid to be a constituent of the con-

cretions found upon the roots of teeth affected by the disorder in question. That Peirce's view contained a large element of truth is demonstrably true; that it was the whole truth even its author did not claim; but by the direction which he gave to the thought of investigators we are gradually unravelling the entanglement of mystery which has for so long involved the study of this disorder.

Uric acid, as is well known, is one of the waste products of cell-metabolism; it represents in part the excess of nitrogen thrown out in the process of tissue metamorphosis, and is within certain limits one of the normal products of nutrition. Like all other waste products of vital action, it is poisonous to the organism that produces it if not normally eliminated or if produced in excess. Haig places the ratio of uric acid formation to that of urea from 1 to 33 to 1 to 35 as normal, and when in excess of that quantity regards it as productive of disturbance in the economy, acting as an irritant poison.

The effects of chronic uric acid poisoning have been pretty fully studied; its action upon the nervous system in the production of migraine, various neuroses, neurasthenia, indigestion, catarrhal affections, gouty manifestations, nephritis, and general malnutrition are all well known. It is, however, not only directly pathogenic by reason of its irritative effect upon the tissues, but indirectly so by the power which it has to diminish the bactericidal activity of the blood plasma, as shown by the experiments of Pansini and Calabrese (1894). These investigators found that the addition of uric acid to blood overcame the activity of the alexins or defensive proteids produced by the white blood-cells. An organism saturated with an excess of uric acid becomes more vulnerable to invasion by disease-producing bacteria.

While a rôle of preeminent importance has been assigned, no doubt justly, to uric acid in disorders consequent upon general malnutrition, investigation of the phenomena incident to uricacidemia has developed the important discovery that uric acid is by no means wholly responsible for all of the pathological results which have been attributed to it. It has been shown that a related group of substances, the so-called alloxuric bodies, are chargeable in some instances to even a greater degree than uric acid with the production of pathological manifestations in the economy. The alloxuric bodies are, like their congener uric acid, waste products of nitrogenous metabolism.

An interesting problem presents itself in attempting to explain the relation of these waste products to the disorders with which their existence in the blood is associated—*e. g.*, gout, malnutrition, etc. Alexander Haig and his followers take the view that uric acid in excess is due to faulty dietetics, insufficient exercise, etc., and that the waste products are taken up by the blood and act as chemical or even mechanical irritants to the tissues fed by the blood-stream, the tissues responding pathologically in the order of their relative resistance to the morbid influence. More recently this view has been combated. Horbaczewski and others have shown that uric acid is produced by the splitting-up of the nuclein of the white blood-cells, and that an abnormal increase of these cells is coincident with an increase in the production of uric acid.

It has further been demonstrated that irritation of the vasomotor sympathetic is followed by a leucocytosis, hence the conclusion is that excessive production of the alloxuric bodies is the result of a neurosis; not the cause of the disease, but its effect. Neusser has, however, shown that the alloxuric bodies are irritant to the sympathetic nervous system, and it would therefore seem in considering the operations of these substances as disease factors that we have to do with a so-called vicious circle, regardless of the initial cause; if we accept the facts as stated, then irritation of the vasomotor sympathetic induces increased formation of leucocytes, which causes excessive production of uric acid products, which in turn bring about increased irritation of the sympathetic and repetition of the steps of the process indefinitely:

Aside from the experimental studies by Peirce, our grounds for considering these matters as related to inflammatory conditions of the peridental membrane and its surrounding tissues are those furnished by the clinical study of cases. The constant association of phagedenic pericementitis with nearly all well-marked cases of lithemia must now be regarded as something more than a mere coincidence. Much antagonism to the so-called "uric acid theory of pyorrhea alveolaris" has grown out of the assumption that all cases of pyorrhea alveolaris were believed to be due to excess of uric acid in the blood. No such sweeping claim was ever made by the supporters of the theory. It must be generally recognized by all who have carefully observed the clinical aspects of the disorder that

necrotic inflammation of the retentive apparatus of the tooth is induced by any cause that will depress the vital potential of its elements to a point where bacterial invasion becomes a factor in the process. But that the systemic condition known as lithemia, or uricacidemia, by which is meant a constant overproduction and imperfect elimination of waste products of nitrogenous metabolism, is a most potent factor in the reduction of vital resistance in the tissues alluded to is also equally evident.

I have admitted the bacterial element as a possible exciting cause, even though it has not yet been demonstrated, not because I am wholly convinced that it is a necessary factor in explaining the etiology of the disorder, but because in the later stages of the process it is necessarily present, and then undoubtedly plays a rôle of more or less importance. The tendency to ascribe all inflammatory conditions of bacterial irritation is as faulty, in view of the facts, as to ascribe all forms of pyorrhea to uric acid poisoning.

We should not overlook the fact however, that these waste products of nitrogenous metabolism are irritant and even poisonous to the tissues when present in sufficient quantity or when their action is prolonged indefinitely, and there would seem to be no sound reason why under favorable circumstances their function as predisposing factors should not become resolved into the exciting cause of the disease process under consideration. Their action in inducing certain forms of nephritis has been pretty clearly demonstrated, and likewise their etiological relation to arterial atheroma. They act as protoplasmic poisons, and in so doing they differ in nowise excepting as to degree of virulency from the poisonous excreta of bacteria in their effect upon the tissue elements.

In our study of the progressive necrotic inflammatory process known as phagedenic pericementitis it would seem that our conceptions of its nature, especially in its earlier manifestations, have been modified if not hampered by the definitions of inflammation arranged for us from the point of view of the bacterial pathologist. The presence of specific bacterial excitors of the inflammatory process seems in many cases to have been assumed as necessary to the inflammatory action; but the scientific method requires that a definition be fitted to the phenomena, not the phenomena to the definition. Pathology furnishes many examples of tissual reaction

towards irritant substances other than bacterial excreta which in their essential characteristics are entirely analogous to so-called true inflammation, and which should be included in any comprehensive definition of that process.

It is, in the opinion of your essayist, to the class of non-bacterial inflammatory tissue reactions that phagedenic pericementitis in its earlier stages belongs, and that the toxic irritant is the group of alloxuric bodies which as the result of faulty metabolism find their way into the blood-stream and thence to the membranous investment of the tooth, that are the active cause of degeneration of the tissue in question, and should the irritative influence be of sufficient intensity as related to the vital resistance of the elements of the membrane, may and do cause its molecular necrosis with attendant inflammatory reaction.

I have elsewhere drawn attention to the acute and chronic forms of the disorder as clinically manifested in pericemental abscess and chronic pyorrhea alveolaris respectively.

It will be seen that in the view here presented the disease has a strongly indicated constitutional origin, certainly so far as its predisposing cause is concerned, so that, if it is to be successfully combated, the systemic vice must first of all be eliminated as a controlling factor.

This phase of the treatment naturally falls within the sphere of the physician, yet in my own experience I have found but a small minority of physicians who have given the subject more than superficial consideration. For that reason it may not be out of place to refer to a few of the clinical phenomena which these cases present, in order that they may help us not only to recognize the condition, but to indicate to the medical adviser the lines along which his efforts are needed.

A constant symptom which is or has been present as the earliest manifestation of error in the nutritional process is constipation. Nearly all patients will admit that they were in good health and had no evidences of the dental disorder until after a constipated habit was fairly established. Usually there is a history of more or less indigestion, both gastric and intestinal, fermentative in character, with acid eructations and flatus, headache, vertigo, palpitation of the heart, nervous irritability, pain at times in the epigastric region, diminished flow of bile, loss of memory, despondency, loss of phys-

ical vigor, inability to work without great effort and fatigue, and the general train of symptoms coincident with general ill-health.

The degree in which these symptoms are manifested marks pretty clearly the extent of the disorder. The mouth conditions are those which are characteristic of typical phagedenic pericementitis. The factor of constipation in these cases is important, and should be eliminated as quickly as possible. The rationale of the pathology is within certain limits sufficiently clear. The waste products of nutrition and food *debris* carried off by the intestinal canal are in themselves poisonous to the human organism if resorbed into the system. Add to this source of toxemia the further factor of putrefaction of the intestinal contents through the agency of microorganisms usually present, and the toxicity of the mass is enormously increased. Retained within the canal these poisons exert a paralyzing action upon the cells of the intestinal walls and thus destroy peristaltic action, so that artificial means for evacuating the intestine become necessary.

As intestinal toxines produce paralysis of peristaltic action, so in an analogous manner do they act as protoplasmic poisons to other tissues to which they may be carried by the blood. It is in this way that they become factors in the irritation of the peridental membrane along with the other waste products of nutrition and of faulty metabolism.

The influence of food habit in this class of cases is of prime importance. Faulty metabolism may be found in the plethoric as well as the anemic type of individual, and a dietetic scheme which would operate favorably in the one class would be unsuitable to the other. Personally I believe it to be a mistake to interdict the use of red meats and other staple forms of nitrogenous diet as a routine measure in all cases. A liberal allowance of meat in anemic cases is of positive value.

Carbohydrate foods, especially as sugar, should be avoided or sparingly used, the main principle being to give a nutritious, easily digestible diet regimen, and one not easily fermentable. The treatment of the constipated habit should not include cathartics, but laxative foods, bran bread, fruit, etc., with occasional small doses of Hunyadi water or sodium phosphate if occasion demands an aperient. The use of lithium salt is desirable and the bitartrate is of the highest efficiency in its class of compounds. Liberal use of

water, at least two quarts *per diem*, is a valuable aid in washing out the waste products from the system. A thorough hygienic regimen, including all factors conducive to a return to normal health, should be rigidly enforced. All wasteful expenditure of nervous energy is to be avoided; exercise, bathing, and sleep are to be utilized in their proper degree and place for their value in restoring the vital potential of the tissues and general bodily vigor.

I have merely indicated some of the more important lines of treatment, which must be modified or amplified to meet the needs of individual cases. The selective feature which these toxins of faulty metabolism seem to show for the ligamentous structures and particularly for the peridental membrane is noticeable and interesting. It has been suggested, with apparently some justice, that as these dense fibrous structures have relatively less vascularity than many other tissues, and as they are required to perform a relatively large amount of mechanical work, their resistance to toxic irritants is proportionally less than those tissues having a more generous vascular supply and which are well supplied with lymphatics. That the vital resistance of the peridental membrane is of a relatively low grade is shown by the readiness with which those teeth which are subjected to undue strain succumb to pyorrhea when the tendency is present, as in malocclusion, undue force in wedging, the improper use of ligatures, clamps, etc. The traumatism or strain upon the tissue lessens its vital resistance and makes the membrane of the particular tooth a point of diminished resistance.

I have purposely confined my presentation to but a limited field in order that the protean character of the manifestations of faulty nutrition might not tempt us too far afield in the consideration of what is certainly one of the vitally important problems in our professional work.

[After the reading of the paper a number of illustrations of the glandular structures, described by Dr. G. V. Black as existing in the peridental membranes, and others showing the general histological structures of that tissue, were thrown upon the screen and described by the essayist.]—*International, May, 1899.*

STRYCHNIN FOR SHOCK.—When there is evidence of shock during a serious operation the hyperdermic injection of one-tenth grain of strychnin will be followed by immediate improvement of the pulse, respiration and color.—*Louisville Med. Monthly.*

Letters.

BALTIMORE LETTER.

Dear Digest:

BALTIMORE, June 15, 1899.

The 15th comes so soon; I am disappointed that I have not the chance to write you a long letter as I contemplated.

We had our meeting in Washington and it was a pronounced success. The heat was depressing and many of the clinicians were deterred by it from undertaking heroic operations. Those who did were the recipients of the sympathy as well as the admiration of the on-lookers. The material on hand was scarcely exhausted—indeed we know of one or two papers not presented because the time was full; and when it is remembered that three days were occupied, with three sessions a day, you will allow that a few seeds have been planted. Last of all, the good-fellowship and professional spirit which thundered so loudly in the opening addresses, were not lost during the entire meeting.

The Washington men turned out nobly; their offices were closed and the holiday spirit pervaded every man; they were out to make themselves agreeable and useful. Baltimore was not shy, and Virginia was better represented than last year. To be sure, we missed some old, familiar faces, and many of the bold, free talkers were not heard; in fact, it seemed a little monotonous to hear the same voices in each discussion. We saw men who could talk and talk well, sit and fan and say nothing. Many of these had messages and valuable ones, but they did not utter them. Why? The deponent saith not. Several of the foreign clinicians did not appear—too hot, we suppose; and some of our men, with high-sounding subjects printed in the program, were there, but did nothing to fulfill the promise in the aforesaid. The cheap notoriety of such a performance we cannot believe would induce any professional man to trick his fellows; we must conclude then, that either the patient was not forthcoming, or the clinician deemed it too hot to meet his obligations. We always shall hold the belief that the man who uses his professional association to advertise himself and climb into positions of trust by promising what he does not redeem is, to say the least, a fraud. If any did so, let him take or resent Oriole's censure.

If those who failed to redeem their pledges are not thus culpable,

they still need a little advice. An engagement should not be lightly regarded by anyone, least of all by a professional man; and of all promises, that of a professional man to his fellows should be most sacred. Let him keep it or die in the attempt.

Pardon us for offering a criticism on a clinic by one of our best men. Nothing the matter with the clinic—successful in the extreme, as are all things that the gentleman does; but can we afford to advertise anybody's anesthetic in our associations? Let the gentleman come out and say what he has that will help, and not hide it behind the cloud of Dr. Blank's Anesthetic. Oriole had come to think that the respectable members of the dental profession at least were beyond paying tribute to schemers and patent-medicine venders. We are satisfied that the gentleman in question is above reproach so far as intention is concerned, but we cannot for the sake of example let this go by without censure.

A paper read about artificial noses and ears had been published in the main in the lay press and was in consequence somewhat stale. Of course the author had nothing to do with the previous publication. Reporters are like orioles—they fly in at the window and lodge in the hair until they absorb the thought. Now if a brother leaves his window conveniently open and wears his hair conveniently long for reporters and orioles, he must expect to be roasted.

The banquet at Cabin John Bridge was truly a treat. The ride out was delightful after two days of non-edible cooking, but the cooking after the ride was all right. No labored speeches were made, the talk and the wines were light, and we all had a good time. The supper was in the open air, and the bugs were a little affectionate, but we'll let that pass. Altogether the occasion and the meeting were the most enjoyable and the most successful we have had. Can you believe it after Oriole's scolding? 'Tis so, nevertheless.

Yours cordially,

ORIOLE.

WHO ARE BEST FITTED TO CONTROL—THE EXAMINERS OR THE FACULTIES?

PHILADELPHIA, June 1, 1899.

To the Editor of the Digest,

DEAR DOCTOR:—I have read with amazement the editorial on page 360 of the May number of the DIGEST, as I have several former ones in which much the same sentiments were expressed. We there see

stated in plain, candid, unmistakable language the underlying principle that has prompted much of the adverse criticism of the dental colleges, and the motive actuating those who are so clamorous in demanding an entrance examination thereto, which is designed to be prohibitive to a class who in the past have furnished the profession with many of its more active and useful members.

A careful reading of this editorial fails to find even an intimation of any great necessity for a standard higher than that now required by the colleges in order to fit the candidate for actual practice. The whole argument is based upon the assumption that the profession is overcrowded; and is an appeal such as would do credit to a trade union organizer, urging as it does that the "output of the colleges," if I may be permitted to use that well understood commercial phrase in this connection, be reduced in order that those who are now in the profession may have more work and better wages. I say on the assumption; no evidence is presented that any of the statements there made are true. Looking around, the well furnished offices and stately residences of dentists in our large cities, and their comfortable homes in even the little country towns; the illustrations of the same seen in our periodicals; the evidences of thrift presented by the well dressed, well preserved men we meet at our annual gatherings, certainly show no visible signs of financial distress; while the number, variety and large sale of labor-saving and luxury-satisfying devices demanded by the profession of those who cater to its needs, hardly bears out the assumption of widespread pitiful poverty.

It is too true that a large majority save but little. That, however, is as true of other callings as of dentistry. The amount a man saves practically bears but little relation to his earnings. Men who have counted their yearly earnings by the tens of thousands, many of them, have so contrived ways to spend it that they have ended their days in poverty; while others of their meager hundreds have without pinching saved enough to round out a ripe old age, with more than comparative comfort. This is as true of dentists as of blacksmiths and bankers. It is a simple equation, the bung-hole and the spigot. If the outgo of the latter exceeds the ingo of the former an empty barrel is inevitable, no matter how ample or active the bung-hole supply may be. Industry and good management will in most cases preserve a prudent relation between the two that will, un-

less overbalanced by serious misfortune, leave something for a rainy day.

Furthermore, what evidence have we that the statement "that at least one-half of those who graduate never start in practice" is true, or if true, is preventable by the means proposed? These are the stock-in-trade arguments always advanced — assumed but never proved.

The concluding statements of the last paragraph beginning on page 363 are unworthy of their author; they are samples, however, of much that has been said in dental meetings by the discontented; they tickle the thoughtless while they disgust the thoughtful.

Now regarding the assertion that the profession is overcrowded, permit me to further say, that it was made as freely and as positively more than forty years ago, when I entered the profession, as it now is. Time and again an unfortunate brother has assigned that as the cause of his meager success. Should it at any time prove true, the first real sign that it is so will be a falling off in the number of those entering the dental colleges. So long as that is not the case, so long as their lecture-rooms are crowded and the colleges taxed to find accommodations for their pupils, rest assured, notwithstanding the outcries of those who are so zealous to save the time and money of the unfortunates, that this is of itself proof that enough graduates not only find openings, but a sufficient return for their labors to encourage others to enter the ranks.

Now to the point. Who should fix the entrance examination standard? Consider, if you please, that this is a very large country; that it has a very mixed population; that while in some sections the educational standard is very high and the opportunities for obtaining it ample, in others the absence of such chances produces a very different state of affairs. This being the case, how can a central body, however well disposed, provide for all these varied conditions? I will grant you if, as was suggested in a former editorial, The National Association of Dental Examiners had been so conducted as to secure alike the endorsement of the profession and the confidence of the educators, its opportunity for good would have been very great. That, however, has not been the case. Some of its more active men, by their indiscreet zeal and their reckless writing, have justly lost the esteem of their professional brethren. The

association itself, by many of its ill-advised actions, and the adoption of rules so arbitrary that even the committee who proposed them was compelled to ask for their repeal at the very next session to that at which they were adopted, has aroused an opposition, not confined to the colleges, that will in the future cause it to be looked upon with well-deserved suspicion, no matter how differently it may be managed. Again, it is urged and justly so, that at best it is an independent, irresponsible body, representing only itself, and accountable to no one. It has denied the right of a state society to suggest to its state examining board any directions or to express its desires. It possesses no legal authority over those it must depend upon to enforce its rules. It is only, and only professes to be, an advisory body, a mere examining board exchange, where state examining boards may lodge or obtain information. Its endorsement is sought only by the weaker colleges as an advertisement card, and has and can have no further weight with state examining boards than they are willing to accord to it as a matter of courtesy; and even this, if the California decision is good law, must be guardedly given. If it should assume, as the writer of the editorial thinks it should, the control of the dental colleges and attempt by any means to reduce their number or the number of their students on such lines as are advised in the editorial, it will then be brought in direct conflict with that great natural law of supply and demand and at once wiped out.

Such an entrance examination as is necessary to prove a student's fitness to enter upon the study of dentistry is right and proper. To attempt to raise the requirements of that examination, as is there suggested, for the distinct and specific purpose of reducing the classes, lessening the number of graduates, and making the dental calling more remunerative, and its services more costly to those requiring it, is indefensible. It is, in other words, a commercial scheme to corner the market or to form a trust. Can we as professional men, not mere shopkeepers, sanction any such proceeding? Let me remind you, if you please, that coincident with the introduction of these matters in the American Dental Association began the "petering out" process which finally ended its life. It was not the only cause, but it was an important factor. Able men who had long taken an active part became weary of the vague charges and insinuations against our educational institutions, and the new grad-

uates were not attracted to meetings where the colleges at which they had graduated were decried as diploma mills, and the teachers they had learned to honor and respect were denounced as mercenary knaves. They were made to feel that they were an unwelcome addition to professional ranks, and modestly kept away, with the result that in a short time the once prosperous American Dental Association was reduced to a meager assembly of croakers and cronies, and had to die. Could the profession at large have more emphatically put its stamp of disapproval on the Association's doings than it did? Can they in any more effective way show their confidence in the dental colleges than they are now doing by sending such crowded classes to their halls? Is there nothing in the remark that the colleges which have ignored the National Examining Board have had the largest classes, suggestive that their course has met with professional approval? Remember, if you please, that the great body of the profession unfortunately is outside of professional societies; it is nevertheless a power to be reckoned with.

Were the National Association of Dental Examiners composed of well-balanced men, fewer politicians and men dominated by commercial instincts; men who are professionally and mentally more the equal of those composing the National Association of College Faculties, they would indeed be the body to which we should naturally look to control and regulate our educational matters. But so long as they are what they are, and have in so pronounced a manner proved their unfitness for the task, we must continue to look to the colleges to so adjust their standards as to meet the varied requirements of the profession they serve. They are well known to the profession, and the profession has shown in the most emphatic manner possible its confidence in their integrity and honor.

Yours truly,

WM. H. TRUMAN.

NEW YORK LETTER.

NEW YORK, June 15, 1899.

To the Editor of The Digest.

MR. EDITOR:—From New York to Seattle and back is seven thousand miles. We left New York April 26 and found ourselves safe home again May 28, going out via the Oregon Short Route and returning on the Canadian Pacific via Montreal. So much of the unexpected has come into our life we no longer marvel.

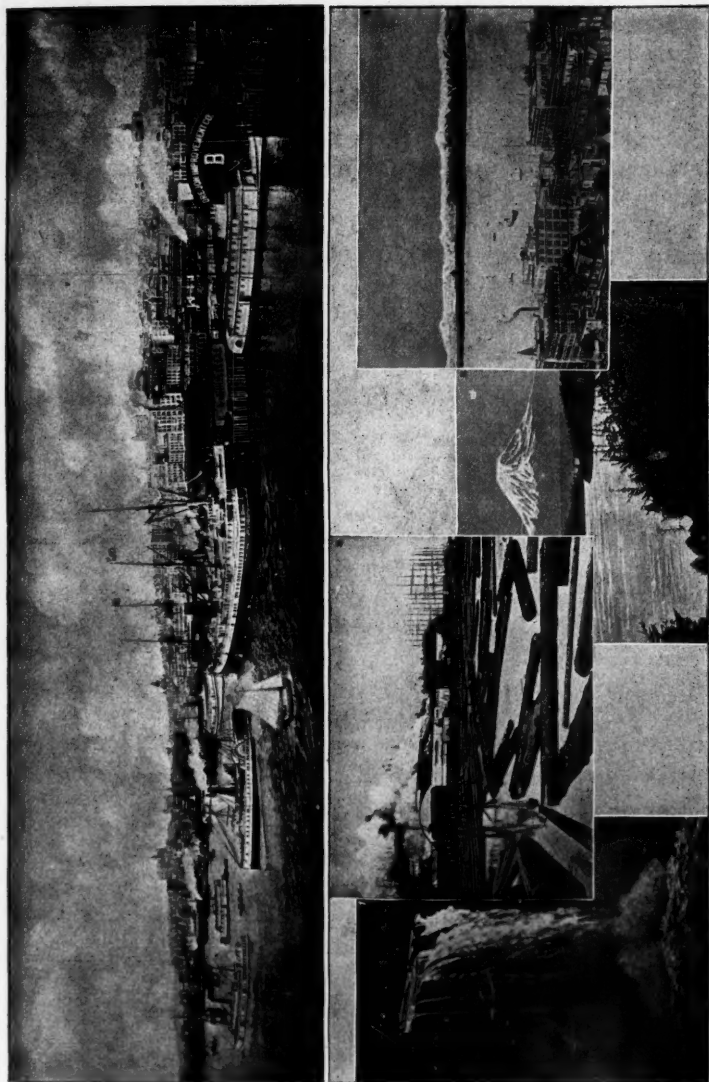
We are now prepared to talk with our all-alive friend Bonwill, not antagonistically but in advocacy of his invention, which is an artificial nipple, which is fully described in a recent number of the *Chicago Medical Journal*. Excuse the deviation, but it applies to our journey, for we accompanied our daughter and grandchild, the latter fifteen months old. No nurse could be procured so we volunteered, little knowing what was in store. We left home a dentist of nearly forty-eight years and came back a trained nurse!

We passed through Chicago April 27, and found every one there puffing because of the unusual warmth. This followed us until we reached Pueblo, where, owing to a decided drop in temperature, a fire was quickly furnished which was needed nearly as far as Portland. We much regretted that we could not have looked up some of the familiar ones in Chicago and Kansas City, but we were not on a dental picnic.

Our journey from Pueblo was most delightful. Coming as we did so far in the summer heat, to be quickly brought face to face with snow-clad mountains of such grandeur, was a vivid transition that we will not attempt to picture with words. (It is marvelous what a grand old world we are in, which Prof. Barrett is spending so foolishly a vast amount of words upon, trying to show that he knows more about its creation than the one who created it. "The foolishness of God is greater than the wisdom of Man." We say, "Shoemaker, stick to your last," for you do make a good shoe.)

During our trip through these wonders we passed through heavy snow-storms. Going down most of the descent during the night, it was another marked transformation to find ourselves looking in the morning upon such a distinctly different formation of country—the plains of Utah. We don't care to be a Mormon and live in Utah. We are too much a New Englander and are too familiar with green grass, and yet know most of the marvelous fertility of the soil in connection with irrigation. This was emphasized by witnessing the fabulous outlay of capital to accomplish these results. We more than marvel at the fortitude, yes, courage, that sends people to these arid plains to seek homes and possibly a fortune; but not a few do it and they have their reward.

We were next flying through Idaho, the scene of the late vandalism of misguided miners. (This is only one of the signs of the times and our vaunted civilization cannot and will not correct the evil.



Christian scientists say it is "error"; God says it is sin, and we think He knows. We pity men who try to teach the young men, particularly in our dental schools, that God's word is not to be relied upon.) Alkali and sage-brush prevailed largely on the plains of Idaho, but there is one thing that does rest the eye, and that is the new grass—alfalfa.

One incident which we must notice—a novelty in itself, but one which brought violent physical distress to our throat and eyes—was a sand-storm. It was such a novelty we would not have had it left out of the program, although we did suffer from it for several days. It was so severe that we came up bump, stock-still into one of its big drifts—we say big, for we never saw snow so piled up, and we got out only by the vigorous shoveling of a large force of laborers.

We admired Oregon from the moment that it came in view. There was such symmetry of form in the mountains, and a modest-looking verdure covering them, seemingly to their tops, which were so high we could not see them from the car window. The road followed the Columbia River, dotted for a hundred miles with the picturesque types and the highly colored wardrobe of the hundreds of Indians along its banks. We envied them their opportunity for an abundance of salmon fishing, which was made apparent by the apparatus in many places along the banks employed by companies of energy and capital now so commonly engaged in the salmon-canning factories.

At 8 o'clock in the morning of the sixth day out from New York we rolled into Seattle, of which we have not a little to say and show, for we remained there nearly three weeks and had ample time to look over this beautiful city of Puget Sound, which has possibilities that we do not believe can be yet measured. For picturesqueness of panoramic variety of scenes where man has built his habitations, this is the grandest it has been our fortune to behold. We give five views only, from many which might be shown, which will prove that we are not exaggerating. Fig. 1. Snoqualmie Falls, 278 feet high. Fig. 2. Port Blakely Saw Mills, the largest in the world. Fig. 3. Mount Rainier (14,444 feet high) from Lake Washington. Fig. 4. Olympic Range from Seattle. Fig. 5. Seattle from the harbor.

The first thing that we noticed was the superabundance of atmosphere—one could fairly eat it. No wonder the city is vibrating

with energy—we never saw anything like it. Everyone is echoing a steady upgrowing of business, and believing it more and more each day. They have had a big boom before and one sees the results of it right and left, but the indication is that the bad effects are fast going off. Alaska has come to the rescue and all its trade has fallen to Seattle merchants. It is being voiced freely that San Francisco has a green-eyed jealousy fastened upon Seattle, and why not? The Pacific trade is sure to fall to its lot in its largest proportion, Japan already has its fine ships there; China also. The Philippines are bound to follow close upon them. Think of it! Nine hundred miles shorter than any other route through the States. Already the Washington state troops in Manila are ordered home by this route.

S. M. Hill, acknowledged the smartest railroad man in the world, has his eye on Seattle, and is building some of the finest docks that his millions can construct, averaging 600 feet long, and his steamships are already unloading from the Orient. We think we speak truthfully when we say that for a city of homes for the rich, and the common people such attractions cannot be duplicated. Build where one may, he cannot go amiss. No one can be shut out of view of an unparalleled beauty of scenery, of water and mountains.

To come back to mundane things—what about the dental fraternity? Among a population of 80,000 they number fifty, among them being some dental parlors. We met a few dentists, but they were of good quality. They hoped that we would be able to remain until the 25th of May so as to meet with the state association. We also hoped so, but felt compelled to take our departure on the 22d. We had promised to give them "What We Know About Riggs' Disease." Some may say, "What an escape."

So far as we could judge from conversation, the compensation for dental services seemed to be about the average. We met a novelty and will speak of it, for we do not consider it misplaced ability. We had an introduction to a stalwart sea captain and saw that his mouth was full of gold crowns. He told us that twenty years of chewing "pig-tail" tobacco had worn all his teeth quite to the gums and he had had them replaced by thirty-two gold crowns which had proved a delight to him. So far as esthetics went he was not in it, but in such a case we commend it, for it was practically all that could be desired. The anterior teeth were so short that they scarcely could be seen.

We do not advise dentists to drop down in Seattle, but the unoccupied country abounds everywhere from there to Point Barrows, Alaska. If health and climate are desired and room to move about in, plenty of all are waiting for the coming dentists, and they are needed where people gather. Nothing so profoundly impressed us as the vastness of our country and the few human beings occupying it.

As we drew out of Seattle on Monday, May 22, we felt very grateful that we had looked upon the scenes that had greeted our eyes. It is said, "Go to Paris—to stop elsewhere is not worth while." If you have not traveled over the great Canadian Pacific railroad, then there is a journey that transcends all. We thought that we had seen something before—well, we had; but the quality and quantity of this trip was immense.

A triumph of engineering is the route over the Rockies. The marvel of these mountains is that not only is there a great variety of grand and high peaks, but each seems to vie with some feature that would transcend the others. The last effort of the climbing train—for it was such—to reach the ridge was watched with deepening interest.

The Glacier House was a point of great curiosity, for we had never known just how a glacier looked, but here we saw one, shedding its cold, glassy turquoise-blue with such quantity of beauty that one does not find fitting words for description.

The Glacier House was the last stopping place before we were to reach the summit of the mountains. At sundown of the day of reaching it we were told by our porter that in the morning we would be ushered into another kind of scenery greatly in contrast with that we had been passing through for two days, and surely it was—the great Canadian plains of 760 miles, which we were a day and three-fourths passing over. These were of a great variety, very largely interspersed with rolling country, and dotted frequently with small lakes, and these alive with wild ducks. All the way we were constantly treated with a view of wild game of varied nature, viz, pelican, grouse, quail, plover both upland and marsh, prairie dog, English hares, cotton-tails, and the beauty of all animals of the plains—the antelope. They came so near we could easily count their spots. We wondered at the sparseness of the settlements, but a change may come with maturer age.

Manitoba is a country of marvel with its countless lakes, its rock-

bound coasts teeming with sport in the piscatorial line. We are a little ahead of our journey. We have not spoken of the wonders of the vastness of the waters of Lake Superior, at which we gazed in amazement hours upon hours.

Sabbath morning at 8:50 found us in New York, and so ended our thirty-third day from home. How soon we get "down in the mouth" again, and the last two weeks have kept us there.

Patient readers, if you are, excuse us if we have overdone our letter in any way, but we trust some will get the full realization of what we have feebly described. Cordially, NEW YORK.

TO PREVENT TEETH CRACKING WHEN SOLDERING.—Before a tooth is backed the holes in the *metal backing* should be countersunk on both sides. This allows for any irregularity of mineral round the pins of the tooth, which would prevent the metal backing if not countersunk fitting quite flush, and consequently much endanger the tooth during the process of riveting. The pins should be riveted only sufficiently to secure the backing and prevent the tooth shifting. If riveted too tightly the tooth will invariably crack under fire, owing to expansion of the metal. Whenever possible we recommend bending the pins in preference to riveting. The best method of heating-up previous to soldering is to place the case as invested in a furnace, and carefully heat it up to a dull red before applying the blowpipe. This will also prevent warping of the plate, on account of its being equally heated throughout. Care should be taken to give only sufficient heat to make the solder flow.

GALVANIC TREATMENT OF VOMITING.—Apostoli read a note at the French Society of Electrotherapy, session of July 21, 1898, on the galvanic treatment of vomiting and its best operative technique. His general conclusions were as follows: 1. Galvanization of the pneumogastric nerves, applied according to the rules formulated in 1882 and 1884 by Dr. Apostoli (which comprises the seat, the nature, the dose, the duration, the time and the number of applications), is the most frequently successful means employed for vomiting of pregnancy and most gastric troubles of hysteria. 2. The best method of galvanization of the pneumogastrics is that which permits use of the maximum density of current over the nerves, whether by placing the positive pole single or double over the nerve, or preferably by placing over each nerve an opposite pole. 3. The bipolar method of using the largest total of lines of galvanic current circulating from one pole to the other, is the method of choice, superior for rapidity and efficaciousness to the monopolar method which, having only one pole active (simple or divided), can, all other things being equal, use only the smallest electrical density or the feeblest total of lines of galvanic current. 4. The clinic has confirmed by sixteen years of Dr. Apostoli's practice the superiority of the bipolar method which he recommends and its incontestable advantages in the immediate symptomatic cure of the nervous troubles of the pneumogastrics (vomiting, gastralgia, nausea).

The Dental Digest.

PUBLISHED THE TWENTIETH DAY OF EVERY MONTH

At 2231 Prairie Avenue, Chicago,

Where All Communications Should be Addressed.

Editorial.

HARMONY BETWEEN THE EXAMINERS AND FACULTIES AS A STEP TOWARDS SECURING BETTER PRELIMINARY EDUCATION.

We take it for granted that all agree this is much needed. How shall it be brought about? In last month's issue we discussed the question editorially, taking the position that some other agency than the College Faculties' Association was necessary to achieve this reform, and we urged that the Examiners' Association was the proper body to accomplish it. We have had many commendations of this editorial and the thinking men of the profession concur in our belief.

Since it is true that almost every state in the Union requires certain qualifications before a man can enter upon the practice of dentistry, it seems strange that the colleges should not be in sympathy with such laws, for if the truth were known, this same legislation is what makes it necessary for students to attend college. And if in sympathy with these laws, why are the colleges not aiding the proper organizations for the enforcement of these laws—the state boards of dental examiners? At present it seems as if some of the college men who oppose the views we have advocated on this subject believe that the chief mission is to fill up the colleges with students who may enter without any supervision other than that which the college imposes. It is true that the Faculties' Association prescribes some regulations, but no one will deny that this body has no means of enforcing or of ascertaining whether such rules are carried out, and we cannot see any way whereby it can supervise the fulfillment of its requirements, whatever they may be, owing to the fact that the colleges are scattered throughout this country. Who then in the natural order of things is more fitted for the enforcement of some legislation than the National Association of Dental Examiners through the state boards? The plans of the

two organizations, as originally outlined, we believe were logically correct, but the strife that arose between the Examiners and Faculties has caused all the trouble, and we think we can trace this disturbance to one individual in the Faculties' Association who was unwilling to have the methods under which his school was conducted investigated by anyone.

The June issue of *Cosmos* contains a long editorial on "The National Standard of Reputability," which discusses the question largely from a legal standpoint. The editor refers to the present condition in Wisconsin, brought about by the refusal of the state board to grant a license to a graduate of the Chicago College of Dental Surgery, and the statement of the board that it will not recognize the two Chicago schools which refused to adopt the standard of requirements laid down by the Examiners' Association. While Dr. Kirk quotes from the court's ruling in the case, he conceals the real facts, which are briefly as follows: A student of the Chicago College presented his diploma to the Wisconsin Board and demanded a license. As this school is one of the thirteen, out of the forty-seven, dental colleges which will not accept or abide by the standard necessary to constitute, in the judgment of the Wisconsin Board, a reputable college, the standard being such as is established by the rules and requirements of the National Association of Dental Examiners, the board refused to issue a license to him upon his diploma without examination. He then sued out an alternative writ of mandamus, alleging the action of the board was arbitrary and improper for various reasons. The board promptly moved to quash the writ, upon the ground that the papers were insufficient, and also that the court had no power to control the action of the board by mandamus, as the legislature had clothed the board with a discretionary power to decide what institutions are or are not reputable. The motion to quash was lost, so the case must still come to trial on its merits. This has not yet been done, and as the board could not have been beaten without a trial, the matter is far from being settled. If it has to be decided through the courts, it means a long and expensive altercation. We believe however, that the better judgment of the Examiners and Faculties will prevail, and that the matter will be settled amicably, as such matters are settled by intelligent people in other lines of life. It will seem strange if they do not adopt what we are suggesting, for

it is a pity that the two organizations which are supposed to elevate the standard of the dental profession, and to have its best interests at heart, should not be able to settle their differences without recourse to law. We therefore will not discuss fully the legal aspects at this time, as we hope that it may all be settled amicably at the coming meetings of the two organizations, which will be held on the same date at Niagara Falls.

While we have always upheld the National Association of Dental Examiners and the state boards, we do not by any means wish to be understood as believing the organizations to be perfect. There is much room for improvement and we would make the following suggestions: First, that they secure a unification of state laws, which would include a unification of examinations; and second, which is also very important, that every state board shall have a list, corrected to date, of every practitioner, licensed and unlicensed, in the state. We are amazed to find many of the boards have none at the present time, and even some of the state lists which have been made up are very incorrect.

It is always darkest just before dawn, and we believe that the climax of dispute has been reached and that there is light ahead on these vexed problems. Certainly greater harmony and better feeling between the two organizations, which could be of so much benefit to the dental profession if properly managed, will be welcomed by every earnest practitioner.

OUR REPLY TO DR. WM. H. TRUEMAN.

In this issue will be found a letter from Dr. Trueman criticising our editorial in the last number. We publish it for two reasons—first, because we have the greatest respect for the integrity and earnestness of the writer; and second, because his is a good illustration of how ignorant men often are of the real facts.

The writer is so blinded by his socialistic tendencies that he believes the shutting out of men who have not the desired preliminary education, but who might in rare cases become good dentists notwithstanding this deficiency, is a greater wrong than the taking in of a large number of uneducated and incompetent men, which can be only an injury to the profession and to the community, and at the same time does such students a great injustice, by taking their money and three years of their time which might have been

used to advantage in other occupations in life to which they were more fitted.

The writer also assumes that our whole complaint is against the overcrowded condition of the profession, when in fact this point was only a minor consideration in our editorial.

It is true we made no attempt to prove the desirability for better preliminary education before entrance, as we did not suppose this question was under dispute, for we thought a better preliminary education was generally admitted to be a need, and that minds disciplined by thorough study are requisite to enable dental students to comprehend and be benefited by lectures, as well as to develop the reasoning powers, which must be well trained, so that they may think logically and do justice to the many perplexing problems that arise in practice. If dentistry is to be a profession and not a trade, we must have men in it who can think and draw logical conclusions, as well as perform the mere mechanical part of this vocation.

It is true that men entered the profession years ago without much preliminary education, and that they afterwards worked their way up to the higher ranks, yet we make the proposition that in years gone by the average dentist had a better disciplined mind and more natural ability than at present, for at that time no one entered the dental profession except after training with and by the advice of some established practitioner, which afforded a guard, which does not now exist, against incompetency. Nowadays young men not only leave their homes, but what is worse, give up various occupations wherein they are making a success, and thinking to better their condition, go direct to the colleges with no other qualification than the money necessary to pay their entrance fees. No friendly dentist advises and makes them familiar with the magnitude of the undertaking, so that the students may be sure they have the necessary qualities of mind and character to make professional men, and they learn the true facts only when they are brought face to face with the struggle for a practice after graduation. Therefore we say that the mere fact of large classes is not a proof of the need for more dentists, and that the present educational system is not necessarily in good repute with the profession at large.

We find this reading notice in a country newspaper, and as a certain college is referred to in the same article, we cannot but believe that the college was instrumental in having such a notice

published: "Dentistry is one of the leading professions of the day. Doctors who were here last week to attend the alumni told me that their practice ran from \$200 to \$600 per month. It is surprising to see how many are leaving school-teaching to attend dental college. There are at least a score of men in every class who have taught from three to ten years in the public schools and given up the profession for dentistry. Many M.D.'s are taking dentistry as an adjunct. The management will send catalogues to anyone who desires information." Such a glowing representation as this might account in part for the large classes.

In the May number of the *International Dental Journal* is an editorial with this title—"Is Dentistry a Remunerative Profession?" The editor attempts to show that it is, but he argues that dentists should charge higher prices, since there is now one dentist to every three thousand inhabitants of the United States, in contrast with former times, when there was one dentist to every seven thousand to ten thousand people. This is an additional proof that our statement that dentistry is overcrowded is correct.

The arguments brought forward by Dr. Trueman merely show what a narrow view he has taken of the question. He "looks around at the well-furnished offices and stately residences of dentists in our large cities," observes "the well-dressed, well-preserved men we meet at our annual gatherings," and believes that this proves that all are successful. He apparently loses sight of the fact that only one-sixth of the dental profession ever attend any dental meetings, and the whole profession can certainly not be judged by this small minority. We have been placed in a position where we have come in contact with the entire dental profession, and we therefore feel justified in stating that we know probably as much as anyone about the financial condition of the dental profession. It is not an exaggeration to say that only one dentist in three is ever entirely free from debt and even pressing financial obligations, and if Dr. Trueman will counsel with those who are in a position to know, instead of trusting to his observations, we are sure that he will get some more reliable information than he now has.

We would here state that the average dentist does not get the remuneration which good dental service deserves, and we contend that a man who has ability enough to practice dentistry, and who has made the outlay of time, money and energy necessary to pre-

pare him for such responsibility, should have greater compensation than the average tradesman. He does not receive it however, and for this reason men of marked ability will not enter the profession, because they can be better remunerated in other occupations in life, and it is this very condition that is lowering the standard of dentistry and making trade and commercial methods necessary to existence.

Dr. Trueman believes that the qualifications for the practice of dentistry should vary with different parts of the country, because the educational standard and the opportunities for obtaining such education differ in various localities. In other words, he believes that in a region where there are many colleges the dentist should be well educated; but in other parts dentists may be densely ignorant, merely because they do not have the same opportunity to obtain even the meager education which is now thought to be necessary. We do not believe any dentist will bear him out in this idea, for it is a direct blow against and diametrically opposed to the unification of state dental laws, a move which is now being fostered by the thinking men of the whole profession.

Our proposition that not over one-half of those graduating ever succeed in establishing a permanent practice, is based on the statements of and information received from several of the oldest and most reliable educators in this country, men who have the welfare of the profession at heart. The very fact that none of the colleges are able to keep track of any considerable number of their graduates, and the additional fact that nothing like a majority of those graduating ever appear on a permanent list, are further proofs of the correctness of our assertion.

As to the American Dental Association "petering out," permit us to remind our critic that the American was never so prosperous and never had so many influential men working in its ranks as at the time when the consolidation with the Southern was effected, which move was made to secure a national body.

If Dr. Trueman will take the time and trouble to procure lists of all who have graduated from the different schools for the past ten years, and will then make a careful search for their present whereabouts and occupations, he will probably be able to give us accurate information as to the number who have succeeded. A conscientious effort in this direction would be a great benefit and object-

lesson to those who have the interest of the dental profession at heart, and if he finds that we have misrepresented the facts in any particular we shall be very glad to make amends, for no one would be more pleased than ourselves to learn that a larger number succeeded than we now think. Our only desire is for a betterment of the dental profession, which we claim is not at present up to the average of other professions, and is not so high as such a calling ought to be.

Notices.

CALIFORNIA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this board, for examination of candidates for license to practice, will begin the first Tuesday in August, 1899, at San Francisco.

W. A. MOORE, Sec'y, Benicia, Cal.

NATIONAL DENTAL ASSOCIATION.

The next annual meeting of the National Dental Association will be held at Niagara Falls, N. Y., commencing Aug. 1, 1899.

GEO. H. CUSHING, Rec. Sec'y.

SOUTH DAKOTA DENTAL SOCIETY.

This body held its annual meeting at Yankton, June 8. The following officers were elected: President, W. O. Robinson; Vice-President, W. W. Price; Secretary and Treasury, C. L. Blunt; Librarian, C. W. Stuttenroch.

NEBRASKA STATE DENTAL ASSOCIATION.

This association met in York, May 16-18, 1899, and the following officers were elected: President, W. A. Ivory; Vice-President, W. H. Sherraden; Recording Secretary, W. R. Clark; Corresponding Secretary, Leah Mills; Treasurer, H. J. Cole.

MINNESOTA STATE DENTAL ASSOCIATION.

The sixteenth annual meeting of this association will be held in Northfield, July 25-27, 1899. Steps are being taken to make this one of the best meetings of the society. All dentists are invited to be present.

H. L. CRUTTENDEN, Sec'y.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-ninth annual meeting of this society will be held in the Assembly Chamber, Capitol Building, Madison, July 18-20 1899. A cordial invitation is extended to all members of the profession.

The State Board of Dental Examiners will meet at the same time and place for the purpose of examining candidates for license to practice.

W. H. MUELLER, Sec'y, Madison, Wis.

WASHINGTON STATE DENTAL SOCIETY.

This society held its annual meeting in Seattle, May 25, 1899. The following officers were elected: President, M. D. Thurston; First Vice-President, E. J. Fisher; Second Vice-President, F. I. Shaw; Treasurer, J. E. Banks; Secretary, D. I. Burkhart, Seattle. The society will probably meet in Spokane next year.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this board will be held at Madison, commencing Tuesday, July 18, 1899, at 9 a. m. All persons wishing to take the examination will please take notice.

W. H. CARSON, Sec'y,

609 Goldsmith Building, Milwaukee.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The next annual session will be held at Niagara Falls, N. Y., at the International Hotel, commencing at 10 a. m., Friday, July 28, and continuing Saturday the 29th and Monday the 31st, adjourning in time for the opening of the National Association on Tuesday. It is hoped that delegates from every state will be present. As this session is some days ahead of the National, please write and secure your rooms as members of National Association of Dental Examiners. The rates will be from \$3.00 to \$4.00 per day, according to location of room.

CHARLES A. MEEKER, Sec'y, Newark, N. J.

AMERICAN DENTAL SOCIETY OF EUROPE.

The twenty-sixth annual meeting of this society will be held in Brussels, August 7-9, 1899. Arrangements have been made at the Hotel Metropole for the accommodation of the members and their friends, while the meetings will be held in the Hotel Ravenstein. Brussels and its surroundings are noted for their beauty and historical interest, and no effort has been spared by the executive committee to make the meeting especially instructive and pleasant. A cordial invitation is extended to any American colleagues who may at the time be visiting Europe.

WALDO E. ROYCE, Sec'y,

2 Lonsdale Gardens, Tunbridge Wells, England.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-ninth annual session of this society will be held in the Auditorium, Asbury Park, July 19-21, 1899. The headquarters will be at Hotel Columbia—rates \$2.50 per day, two in room; \$3.00 per day, one in room. Demonstration of porcelain inlay work will receive more than usual attention. Dr. Jenkins of Dresden will give a clinic with the Jenkins furnace, and read a paper on the subject. Dr. Joseph Head of Philadelphia will clinic with the electric furnace and read a paper, and Dr. W. A. Chupein of Philadelphia will demonstrate his method of inlay work and read a paper. The exhibition of electrical appliances for dentists will be of more than usual interest, and of greater variety than is usual at these meetings.

CHARLES A. MEEKER, Sec'y, Newark.

MISSOURI STATE DENTAL ASSOCIATION.

The thirty-fifth annual meeting of this association will be held in the Warwick Club assembly-room, Kansas City, July 11-14, 1899. Dr. C. L. Hungerford, supervisor of clinics, extends an invitation to all who have something new, novel or improved to correspond with him. Headquarters will be at Midland Hotel; rates \$1 and upward on the European plan; \$2.50 on the American plan. Rates at the Victoria Hotel, \$2 per day—bath with each room. Railroad rates of one and one third fare on certificate plan have been secured. This rate applies only to Missouri. Visitors from adjoining states should purchase tickets to first stop after crossing state line, then to Kansas City, taking receipt for fare paid. Tickets must cost over 50 cents to secure return reduction. A cordial invitation is extended to all members of the profession in this and other states. B. L. THORPE, Sec'y, St. Louis.

ARRANGEMENTS FOR NATIONAL DENTAL ASSOCIATION MEETING.

Arrangements for the meeting of the National Dental Association are not yet quite completed. A rate of one-and-a-third fares has been granted on the certificate plan by some of the railroad associations. Replies have not been received from all as yet, but we expect that within a week all will grant this concession. On Wednesday, Aug. 2, the special agent of the Trunk Line Association will be at the meeting to qualify certificates. All attending should be sure to get receipt from local ticket agent at time of purchasing ticket, showing that full fare has been paid; otherwise they will not be entitled to rebate on return ticket. The tickets at reduced rates are good from July 24 to Aug. 9, inclusive. Dr. M. O. Cooley of Niagara Falls will engage rooms and give any desired information.

Owing to insufficiency of reports from secretaries of sections, we are unable to issue at this time a complete literary program.

J. N. CROUSE, Chairman Executive Committee.

LATEST DENTAL PATENTS.

- 30,883. Design, rubber-dam clamp, Edward N. La Veine, Kansas City.
- 625,043. Dental plugger, Theodore G. Lewis, assignor to Buffalo Dental Manufacturing Company, Buffalo,
- 625,319. Disinfecting composition and making same, Joachim von Brenner, Vienna.
- 625,354. Dental spatula, Alanson H. Putnam, Toronto, Canada.
- 625,401. Dental tool, Alvan P. Lauterman, Chicago.
- 625,425. Dental chair, Richard W. Sonnex, Barnet, assignor to Dental Manufacturing Company, Limited, London.
- 625,434. Syringe nozzle, Arthur W. Browne, New York; assignor to S. S. White Dental Manufacturing Company, Philadelphia.
- 625,888. Dental matrix clamp, Laurence P. Leonard, Waseca, Minn.
- 626,066. Attachment for dental spittoons, Frank Hurlbut, assignor to A. C. Clark, Chicago.
- 626,476. Tooth regulating device, Edward H. Angle, St. Louis.
- 626,287. Artificial tooth and plate, George H. Modemann, New York.

32,893. Trade-marks.—Antiseptics, Ch. Prevet & Cie, Paris, France.

32,894. Antiseptics, Ch. Prevet & Cie, Paris, France.

33,000. Disinfectants and deodorizers, Carlostine E. Blake, Minneapolis.

AMENDED DENTAL LAW OF ILLINOIS.

AN ACT to insure the better education of practitioners of dental surgery, and to regulate the practice of dentistry in the State of Illinois. Approved May 30, 1881. As amended and approved April 15, 1899.

WHO MAY PRACTICE—DIPLOMA.—Section 1. *Be it enacted by the people of the State of Illinois, represented in the General Assembly,* That it shall be unlawful for any person, who is not at the time of the passage of this act engaged in the practice of dentistry in this state, to commence such practice unless such person shall have received a diploma from the faculty of some reputable dental college, duly authorized by this state, or of some other of the United States, or by the laws of some foreign country, in which college or colleges there was at the time of the issue of such diploma, annually delivered a full course of lectures and instructions in dental surgery; provided, that any person removing into this state, who shall have been for a period of ten years prior to such removal a practicing dentist, and, provided, also, any person holding the diploma of doctor of medicine from any reputable medical college of medicine, shall be entitled to practice dentistry in this state, upon obtaining a license for that purpose as hereinafter provided; and nothing in this act shall be construed to prohibit any physician or surgeon from extracting teeth.

BOARD OF EXAMINERS CREATED—DUTY—APPOINTMENT.—Sec. 2. A board of examiners, to consist of five practicing dentists, is hereby created, whose duty it shall be to carry out the purposes and enforce the provisions of this act. The members of said board shall be appointed by the Governor. The term for which said board shall hold their offices shall be five years, except the members of this board first to be appointed under this act shall hold their offices for the term of one, two, three, four and five years, respectively, and until their successors shall be duly appointed. In case of a vacancy occurring in said board, such vacancy shall be filled by the Governor.

ORGANIZATION OF THE BOARD.—Sec. 3. Said board shall choose one of its members president and one the secretary thereof, and it shall meet at least once in each year, and as much oftener and at such times and places as it may deem necessary. A majority of said board shall at all times constitute a quorum, and the proceedings thereof shall, at all reasonable times, be open to public inspection.

WHO MAY PRACTICE—REGISTRATION.—Sec. 4. It shall be the duty of every person who is engaged in the practice of dentistry in this state, within six months of the date of the passage of this act, to cause his or her name and residence or place of business to be registered on the books of said board of examiners, who shall keep a book for that purpose; and every person who shall so register with said board as a practitioner of dentistry, may continue to practice the same as such, without incurring any of the liabilities or the penalties provided in this act.

PERSONS NOT REGISTERED—MUST BE EXAMINED.—Sec. 5. No person whose name is not registered on the books of said board as a regular practitioner of dentistry, within the time prescribed in the preceding section, shall be permitted to practice dentistry in this state until such person shall have been duly examined by said board and regularly licensed in accordance with the provisions of this act.

EXAMINATION—LICENSE.—Sec. 6. Any and all persons who shall so desire, may appear before said board at any of its regular meetings and be examined with reference to their knowledge and skill in dental surgery, and, if the examination of any such person or persons shall prove satisfactory to said board, the board of examiners shall issue to such persons as they shall find from such examinations to possess the requisite qualifications, a license to practice dentistry in accordance with the provisions of this act. But said board shall, at all times, issue a license to any regular graduate of any reputable dental college without examination, upon the payment of such graduate, to the said board, of a fee of five dollars. All licenses issued by said board shall be signed by the members thereof, and be attested by its president and secretary; and such license shall be prima facie evidence of the right of the holder to practice dentistry in the State of Illinois.

TEMPORARY LICENSE.—Sec. 7. Any member of said board may issue a temporary license to any applicant, upon the presentation by such applicant of the evidence of the necessary qualifications to practice dentistry, and such temporary license shall remain in force until the next regular meeting of said board occurring after date of such temporary license, and no longer.

VIOLATION—PENALTY.—Sec. 8. Any person who shall violate any of the provisions of this act shall be liable to prosecution before any court of competent jurisdiction, in the name of the people of the State of Illinois, and upon conviction may be fined in any sum not less than \$25, nor more than \$100, for each and every offense. All fines and penalties recovered under this act shall be paid to the Illinois State Board of Dental Examiners for their use.

FEES—PER DIEM—EXPENSES—REPORTS.—Sec. 9. In order to provide the means for carrying out and maintaining the provisions of this act, the said board of examiners may charge each person applying to, or appearing before them for examination for license to practice dentistry, a fee of ten dollars, and out of the funds coming into the possession of the board from the fees so charged, the members of said board may receive as compensation the sum of five dollars for each day actually engaged in the duties of their office, and all legitimate and necessary expenses incurred in attending the meetings of the said board. Said expenses shall be paid from the fees and penalties received by the board, under the provisions of this act. All moneys received in excess of said per diem allowance and other expenses above provided for, shall be held by the secretary of said board as a special fund for meeting the expenses of said board, by giving such bond as the board shall, from time to time, direct. And said board shall make an annual

report of its proceedings to the Governor, by the fifteenth of December of each year, together with an account of all moneys received and disbursed by them pursuant to this act.

LICENSES TO BE FILED WITH COUNTY CLERK—FEES—PENALTY.—Sec. 10. Any person who shall be licensed by said board to practice dentistry, shall cause his or her license to be registered with the county clerk in the county in which such person may reside to engage in the practice of dentistry, within six months from its date, and the date of registering shall be endorsed thereon. The county clerks of the several counties in this state shall charge a fee of twenty-five cents for registering such license. Any person holding such license who removes to another county, or desires to practice in more than one county, shall register his or her license as above directed in each of such county or counties. The holder of a license shall not practice in a county until his license is registered in such county. Any failure, neglect or refusal to register the license in some one county in this state for a period of six months from the date of issue, shall work a forfeiture of the license, and no license, when once forfeited, shall be reissued, except upon the payment to the State Board of Dental Examiners of a penalty of twenty-five dollars for such neglect, failure or refusal.

News Summary.

PARKE, DAVIS & CO. have removed their Chicago office to new and enlarged quarters, Suite 404, 67 Wabash avenue.

A. M. AUSTIN of Rockland, one of Maine's leading dentists, died suddenly June 2, 1899, from heart-failure, aged 59 years.

WILSONIAN DENTAL SOCIETY of the Western Reserve Dental College, Cleveland, held a banquet the evening of May 26.

SIMON S. CLOSE, a dentist of New York, died at his home in Mount Vernon, June 10, 1899, aged 75 years. His practice extended over a period of nearly forty years.

DR. GEO. H. CUSHING has accepted the chair of clinical dentistry, also the superintendency of the infirmary, of the College of Dentistry, University of Southern California.

CHAS. A. HAWLEY, a dentist of Columbus, O., recently lost part of the thumb and fingers of his right hand, as the result of an explosion while taking a flash-light photograph.

A CORRECTION.—The annual meeting of the National Dental Association will be held at Niagara Falls August 1, 1899, instead of August 14, as inadvertently appeared in our last issue.

KENTUCKY STATE DENTAL ASSOCIATION recently met at Mammoth Cave. When you come to think of it, this is about as sizeable a cavity as members of the profession ever attempted to fill.

ARKANSAS DENTAL EXAMINERS.—Gov. Jones appointed the following members of the state board of dental examiners; J. S. Stillman, Searcy; J. M.

Flenniken, Camden; C. S. Simms, Dandanelle; J. R. Southworth, Little Rock; J. B. Pollard, Hot Springs.

TRUTHFUL VERDICT.—A Christian Scientist died a few days ago in Mount Vernon, N. Y., after a three months' illness, during which she refused medical treatment. The coroner endorsed on the death certificate that she died "of neglect, dropsy, and Christian science treatment."—*Med. Record*.

SHORT BUT SWEET.—A doctor noted for his laconic style of expression sent the following terse and witty note to a refractory patient who paid no attention to reiterated demands for the payment of his bill: "Sir,—if you pay this bill you will oblige me. If you don't I shall oblige you."—*N. Y. Lancet*.

LEBANON VALLEY DENTAL ASSOCIATION held its twenty-fourth annual session at Harrisburg, May 18, 1899. The following officers were elected: President, E. P. Kremer; Vice-President, W. D. DeLong; Recording Secretary, H. J. Herbein; Treasurer, C. B. Wagner; Secretary, P. K. Filbert, Pottsville.

ONE ON THE SURGEON.—A noted surgeon of London, who was called to attend the Queen just at his lecture hour at one of the large colleges, had written upon the bulletin board, "Dr. ——— will not lecture to-day. Gone to attend the Queen." Some miscreant wrote underneath the message "God Save the Queen."

PROPHYLAXIS AGAINST INFECTION.—If you are about to examine a septic case or one in which you suspect syphilis, wash your hands in vinegar or dilute acetic acid, and you will soon discover by the smarting any little scratches or abrasions in your skin which might become the starting-points of infection.—*Medical Sentinel*.

SUBLIME FAITH.—A dermatologist began a paper on alopecia as follows: "Faith is usually pictured as a maiden clinging convulsively to the rock of ages. I think a more impressive representation would be that of a bald-headed patient rubbing vigorously into his scalp the remedy prescribed by the bald-headed specialist in skin diseases."

APATHY OF ENGLISH JOURNALS.—The dental journals of England must be jealous of American efforts, as they make no mention of the movement to wipe out the diploma mills. English and European dentists suffer greatly from these worthless diplomas, and it would seem as if the journals of those countries should cooperate with us in this work.

ISAAO HAAS, a prominent Indiana dentist, died at Evansville at the age of 70 years, June 5, 1899, after suffering a year from cancer of the stomach. Dr. Haas resigned the position as manager of a telegraph line running through Ohio, Indiana and Illinois to study dentistry under Profs. A. M. Morse of LaFayette, Ind., and Samuel Wardle of Cincinnati, both eminent members of the profession, and retired from active service about ten years ago.

IMMER C. ST. JOHN, a prominent dentist of Minneapolis, died June 3, 1899, in Winona. Dr. St. John had been about his office as usual since returning from clinicing before the Illinois State Dental Society, but caught a slight cold May 26, which finally developed into the malady which caused his

demise. Dr. St. John was born in LeRoy, N. Y., Aug. 13, 1855. On attaining his majority he began the study of medicine, but later took up dentistry as his chosen profession, graduating from Ann Arbor in 1879. The last sixteen years he practiced in Minneapolis with considerable success and was considered an authority by his colleagues.

INORDINATE SYMPATHY.—A physician in an article illustrating the evil custom of talking to an invalid about his pains, says that once he requested a mother to mark a stroke upon a paper each time she asked a sick daughter how she was. The next day to her astonishment, she made 100 strokes. A three months' visit away from home was prescribed.—*Medical Record*.

SURGICAL INTERVENTION ON THE INSANE.—Picque of Paris proposes (*Presse Med.*) to increase the discretionary powers of the curator or administrative committee in respect to operations deemed indispensable by the physicians of the asylum that has the insane patient in charge, adding to the present regulations: "The administrator may, in case of conflict with the family, order the application of treatments considered indispensable."

POSSIBLE.—"Now, I suppose," remarked Mrs. Snaggs, "that the surgeons of the army are attached to the medical corps."

"Your supposition does you great credit," replied Mr. Snaggs sarcastically. "It's a wonder you didn't imagine that doctors joined the army for the purpose of building bridges or going up in balloons. Where should army surgeons be, except in the medical corps?"

"Well, I thought that they might possibly belong to the lancers.—*Pittsburg Chronicle*.

VERY ANNOYING.—An Englishman traveling in Maryland had occasion to investigate the running time of trains that passed through the small place where he was stopping. Carefully searching a time-table he found apparently that there would be an express train due at 4 o'clock that afternoon. The Englishman was on hand with his grip, etc., and so was the express train. The intending passenger watched it approach and thunder by the station at top speed. The traveler was annoyed, and, turning to a colored man who stood near, remarked: "That train didn't stop!" "No, sir," replied the colored citizen cheerfully, "didn't ev'n hes'tate."—*Argonaut*.

ABSORPTION OF IRON.—As the outcome of careful experimental observations, Austin (*Boston Medical and Surgical Journal*) concludes that iron is being constantly eliminated both in the urine and in the fæces, even during fasting; that raw meat apparently furnishes an available form of iron for absorption under normal conditions; that inorganic iron, as represented by ferrous sulphate, is non-absorbable; that albuminates and peptonates of iron are absorbable but to a limited extent; and that organic iron, of which hæmatin and hæmoglobin are representatives, furnishes the most easily absorbable and the most valuable of all iron preparations.

SOME MEDICAMENTS WHICH AGE AFFECTS.—Most of the official pharmacopeia preparations are so compounded as to prevent any marked deterioration, but there are a few which age renders inert or markedly diminished

in quality. Tincture of iodine, U. S. P., under careful handling deteriorates after two months, and should in consequence never be prepared in large quantities. Spirits of nitrous ether remain at a fair strength for three months only. Dilute hydrocyanic acid loses half its strength in six months. Among others which deteriorate might be mentioned syrup of wild cherry, syrup of althea, camphor water, fennel water, anise water, dilute nitro-hydrochloric acid, etc.—*Pacific Med. Jour.*

PACKING PINK RUBBER.—At one time we almost invariably had disastrous results in packing pink rubber to imitate the gums when making artificial teeth, by the red or black rubber cropping through and spoiling the effect. Now we rarely if ever have such results, and have discovered the cause of our failure. Pack the pink rubber well between the teeth, using a thin instrument to do this. Cut the gates or outlets for any excess of rubber, *entirely on the back of the flask, none whatever on the front.* Boil the flask well, at least ten minutes, and *screw down the two front bolts first.* When the front part of the flask is brought together then screw down the back nut. Using these precautions, we cannot recall a single occasion where the red or black rubber has cropped through to spoil the effect.—*Theodore F. Chupein in Dent. Off. and Lab.*

MEDICAL STUDENT'S PRIMER OF PATHOLOGY.—What place is this? This is the Pathological Society. How does one know it is the Pathological Society? You know it by the specimens and smells.

What does that gentleman say? He says he has made a post-mortem. All the gentlemen make post-mortems. They would rather make a post-mortem than go to a party.

What is that on a plate? That is a tumor. It is a very large tumor. It weighs one hundred and twelve pounds. The patient weighed eighty eight pounds. Was the tumor removed from the patient? No, the patient was removed from the tumor. Did they save the patient? No, but they saved the tumor.

What is this in the bottle? It is a tape-worm. It is a long tape-worm; it is three-quarters of a mile long. Is that much for a tape-worm? It is indeed much for a tape-worm, but not much for the Pathological Society.—*Indiana Med. Jour.*

TREATMENT OF INOPERABLE CANCER.—C. H. Fraser (*Am. Jour. of Med. Sc.*, May, 1899) says that of all the methods that have been suggested in the treatment of inoperable cancer, but one has had sufficient trial to warrant its recognition. The mixed toxins of erysipelas and bacillus prodigiosus have been employed by Coley himself in 148 cases, and by other observers in thirty-five cases. Of the 148 cases the treatment may be regarded as primarily successful in twenty-four, or fifteen per cent; and of the series of thirty-five cases, twenty-six disappeared completely. Two others decreased so much that only an insignificant node was left. These results are sufficient to warrant this form of treatment to be pursued in the strictly inoperable cases. Unfortunately but little success has been obtained in its application to cancer proper, the best results being reported in cases of spindle-cell sar-

coma. The toxins have been used for a short time after operation with some promise of success as a prophylactic measure. The treatment at least rests on a logical and scientific basis, and inasmuch as so many authentic cases have already been recorded in which there has been no recurrence in three years, it cannot be ignored by the profession.

HOW TO PREVENT ZINC FROM BUBBLING WHEN POURING A MODEL WITH A CORE.—Almost everyone seems to have more or less trouble with the zinc bubbling in pouring a model with a core; and each one, so far as I have been able to ascertain, ascribes the cause of it to moisture contained in the core. Being confronted by the operation the other day, on reasoning as to the possible cause of it, the conclusion arrived at was that there must be some other factor involved besides moisture. Looking at the core and noticing the large grains of sand of which it was composed, it gradually dawned upon my mind that the larger the individual particles of which a body is composed the larger must be the spaces between them, or, in other words, the greater must be the porosity of the body as a whole. "Vacuums do not exist," so we further concluded that those spaces must be filled with air; and if air expands 2-273 of its volume for each degree Centigrade, something was "bound to happen" when pouring zinc over a cold (comparatively speaking) core. Accordingly the core was put over a gas furnace in the laboratory and heated almost red hot, then placed in position and the die poured perfectly.—*Penn. Dental Journal*.

AN UNUSUAL BEQUEST.—Dr. W. James Starbuck of Boston forwards us a clipping from the *Piscataqua Observer* which is a copy of one of the bequests of the will of J. C. McKee, late of Butler, Pa., a retired lieutenant-colonel and surgeon of the U. S. army, and which is so novel and unusual that we reproduce it. Every dentist who reads this will agree with Col. McKee on the importance of the matter: "I give and bequeath to the board of school directors of the borough of Butler, Pa., for the use of the school district of said borough, the sum of one thousand dollars (\$1000), provided the said school board shall by resolution entered on its minutes accept the same, upon condition that the said board shall require and direct the several teachers and instructors employed by them in the schools of said district, from time to time, to give their pupils instructions at stated times during the school term of each year successively after my death, on the importance, as a matter of health, of the care, attention and preservation of their teeth, of the beneficial effects of the use of the tooth-brush as a means of cleansing and preserving the same, and if ailing or decaying, of the importance of their timely treatment by a competent dentist, and especially to impress on their minds the penalties which will undoubtedly follow their neglect to give attention to these personal matters, such as toothache, early loss of teeth, ill appearance, bad breath and perhaps a poisoned system, and the disgust and contempt of friends that may follow and annoy them throughout life; and that the teachers and instructors so employed shall also be required to report from time to time to the board any pupil whose teeth require treatment, but who from poverty or other cause neglects the same; and I request the said

board to have my reasons for making this request set out on a type-written paper accompanying this my last will and testament, published in the newspapers of the borough of Butler on the acceptance hereof; and also, on condition that the said board shall devote and use a sum of not less than fifty dollars (\$50) each year, if that amount shall be necessary, in the employment of a competent dentist in said borough to treat the teeth of said pupils of said schools as shall be recommended to him by said board by certificate in writing, and whom the board may determine on application or report of teachers or instructors, irrespective of race, color, politics or religion, are in need of such treatment, always preferring those whose parents or guardians are least able to pay for such treatment." In a codicil he says: "It is my will and desire to increase my gift for the preservation of the teeth of the poor children of the common schools of the borough of Butler, Pa., mentioned in 'Item 15, letter C,' one thousand dollars, and I hereby give and bequeath one thousand dollars additional to the said object, making two thousand dollars in all."

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